

ECOLOGICAL MONOGRAPHS

Museums

QH

540

E17

Index

v. 1-20

TWENTY-YEAR INDEX

Volumes 1-20, 1931-1950

COMPILED BY

Donald R. Lawrence and Elizabeth G. Lawrence

EDITORS

James Blatter, H. T. Coupland, Donald P. Deegan,
Walter A. Rugeley, Harold F. Reed, Frank E. Hulpe,
Paul C. Lemon, Robert Livingston, Walter E. Hoar,
Max Parich, John F. Peltou, Jeanette Deane, Robert
B. Platt, Loren Borge, Eric Quarterman, Burton
Rand, Forest Stearns, Milton E. Tucker, Edwin W.
Tisdale, Philip D. Whitford, R. H. Whitaker

Durham, North Carolina
DUKE UNIVERSITY PRESS

ECOLOGICAL MONOGRAPHS

TWENTY-YEAR INDEX

Volumes 1-20, 1931-1950

COMMITTEE ON INDEX

Donald B. Lawrence and Elizabeth G. Lawrence

INDEXERS

Janice Beatley, R. T. Coupland, Donald P. Duncan,
Willis A. Eggler, Harold F. Heady, Frank F. Hooper,
Paul C. Lemon, Robert Livingston, Walter G. Moore,
Max Partch, John F. Pelton, Jeanette Pelton, Robert
B. Platt, Loren Potter, Elsie Quarterman, Patricia
Rand, Forest Stearns, Milton E. Tinker, Edwin W.
Tisdale, Philip B. Whitford, R. H. Whittaker

DURHAM, NORTH CAROLINA

DUKE UNIVERSITY PRESS

1956

Reprinted with the permission of the Duke University Press.

JOHNSON REPRINT CORPORATION

111 Fifth Avenue, New York 3, N. Y.

JOHNSON REPRINT COMPANY LIMITED

Berkeley Square House, London, W. 1

UNIVERSITY OF MICHIGAN LIBRARIES

© 1956, Duke University Press
Cambridge University Press, London, N.W.1, England

Library of Congress Catalogue Card Number 32-20689

First Reprinting, 1963, Johnson Reprint Corporation

ARTI

AIKI
ALBI
ALL
BILL
BURI
CAIN
CHA
COKI
COOK
COOR
DARI
DEEV
EME
ERR
EWI
FUL
GATH
GLE
GRA
HAM
HAN
JUD
KEN

ERN
R. O

13-160639

PUBLISHED FOR THE
ECOLOGICAL SOCIETY OF AMERICA

1956

EDITORS OF ECOLOGICAL MONOGRAPHS

Zoology

ARTHUR S. PEARSE, 1931-1950

Botany

CLARENCE F. KORSTIAN, 1933-1949

HENRY J. OOSTING, 1950-

EDITORIAL BOARD

AIKMAN, J. M., 1942-1944
ALBERTSON, F. W., 1944-1946
ALLEE, W. C., 1935-1937
BILLINGS, WILLIAM D., 1948-1950
BURNS, GEORGE P., 1937-1939
CAIN, STANLEY A., 1940
CHAPMAN, R. N., 1931-1932
COKER, R. E., 1931-1934
COOK, WILLIAM C., 1948-1950
COOPER, WILLIAM S., 1933-1935
DARROW, ROBERT A., 1950-
DEEVEY, EDWARD S., JR., *Ex officio* 1950-
EMERSON, ALFRED E., 1932-1934; *Ex officio* 1935-1939
ERRINGTON, PAUL L., 1939-1941
EWING, H. E., 1944-1946
FULLER, GEORGE D., 1932-1934; *Ex officio* 1935-1939
GATES, F. C., 1945-1947
GLEASON, H. A., 1931-1934
GRAHAM, SAMUEL A., 1946-1948
HAMILTON, W. J., JR., 1950
HANSON, HERBERT C., 1936-1938
JUDAY, CHANCEY, 1931-1933; 1936-1938; 1941-1943
KENNEDY, C. H., 1933-1935; 1937-1939

LAWRENCE, DONALD B., *Ex officio* 1947-
LUTZ, H. J., 1949-
METCALF, Z. P., 1940-1942
MOORE, BARRINGTON, 1931
NICHOLS, GEORGE E., 1938-1939
OLMSTED, CHARLES E., *Ex officio* 1942-1946
PARK, ORLANDO, 1947-1949
PARK, THOMAS, *Ex officio* 1940-1949
PENNAK, ROBERT W., 1945-1946
POWERS, E. B., 1938-1940
RAMALEY, FRANCIS, *Ex officio* 1940-1941
RAUP, HUGH M., 1947-1949
SAMPSON, ARTHUR W., 1943-1945
SAMPSON, HOMER C., 1941-1943
SCOTT, JOHN W., 1946-1948
SEARS, PAUL B., 1934-1936
STORER, TRACY I., 1949-
TAYLOR, WALTER P., 1943-1945
TRANSEAU, E. N., 1931-1933; 1935-1937
VAN CLEAVE, H. J., 1942-1944
WEAVER, J. E., 1931-1932; 1940-1942
WHERRY, EDGAR T., 1939-1941
WRIGHT, A. H., 1934-1936

BUSINESS MANAGERS

ERNEST SEEMAN, 1931-1934
R. O. RIVERA, 1935-1941

EXIE DUNCAN, 1942-1950

FOREWORD

Even before the publication of *ECOLOGY*, the official organ of the Ecological Society of America, had gotten on a sound financial basis the need for an outlet through which to publish longer papers than could be used in that journal began to receive serious consideration. The history of the preliminary discussions and the establishment of *ECOLOGICAL MONOGRAPHS* are reported in the proceedings of the Society meetings held during the period from 1925 to 1929, inclusive (*ECOLOGY* 7: 245, 1926; 8: 271-272, 1927; 9: 257-258, 1928; 10: 261-262, 1929; 11: 458-459, 1930).

In the deliberations which preceded the founding of the *MONOGRAPHS* two important decisions stand out as worthy of special mention. First, the members of the Society believed so strongly in the need for a publication source for monographic papers that on recommendation of the Committee on Research Publication Facilities the Society voted that a new class of membership be recognized to be called *Sustaining Members* to be made up of those members of the Ecological Society of America who were willing to pay annual dues of ten dollars in place of the usual four dollars, of which dues five dollars went to the support of *ECOLOGICAL MONOGRAPHS*.¹ Second, through the foresight and persuasiveness of Dr. A. S. Pearse it was possible for the Society to have the excellent cooperation of Duke University, through its Press, in assuming financial responsibility for the new journal, but leaving the editorial functions to the Society. This assistance involved providing the services of the business manager, necessary clerical assistance, and especially the absorbing of annual deficits in the cost of publication, which have continued to the present.

Because of this reason and his outstanding achievements as a biologist and an animal ecologist it was most appropriate for Dr. Pearse to be the unanimous choice for the first editor of the *MONOGRAPHS*.

ECOLOGICAL MONOGRAPHS has now taken its place among the invaluable scientific publications of the World. It is fitting that a cumulative index for the first twenty volumes is now made available. The index committee and its volunteer helpers deserve the heart-felt thanks of the Society and, in fact, of all ecologists for the results of a very useful job well done.

C. F. KORSTIAN.

¹ The dues of sustaining members were recently increased to \$12.50, of which six dollars goes to the *MONOGRAPHS*.

KEY TO THE USE OF THE INDEX

Items indexed are as follows:

Authors of articles. Full titles and the number of figures are included.

Coauthors, by cross reference to the first author named.

Titles of articles, followed by surnames of the authors in parentheses and the number of figures. In indexing titles, the initial words "a," "an," "some" and "the" have been omitted.

Other significant words which appear in titles or in the texts of papers. All entries in this category include the authors' surnames in parentheses, so that the reader may refer to author entry for further information. Two special types of entry in this category are:

Names of organisms. Scientific binomials are italicized. Genus names alone are not italicized except as initial words in items indexed. Authorities are omitted.

Geographic locations. Papers on the United States and Canada are indexed under the names of States or Provinces. Papers on other parts of the world are indexed under the names of the respective countries.

Instruments and Methods. Under these headings are included items which are described for the first time, or which seem to be of general interest aside from their use in a specific piece of research.

Illustrations. An effort has been made to index all pictures of general interest under the main heading "Illustrations" and secondarily under names of organisms or geographic location.

Diagrams which seem to have significance beyond the scope of the article in which they appear are indexed under the main heading "Illustrations," subheading "Diagrams."

Maps which seem to be of value independent of the article in which they appear are listed under the main heading "Maps."

Date of publication in ECOLOGICAL MONOGRAPHS may be computed by adding 30 to the Volume number. Volume 1 was published in 1931 and Volume 20 in 1950.

Abandon
soil-r

succes

N

C

V

abies, r
gran

lasie

mag

Abundant
bird

con

estu

pla

acer,
rui
sac

spj

acidit

acid

activ

adan

dan

day

en

d

li

n

n

c

s

de

de

ed

es

fr

g

INDEX

- Abandoned fields, reforestation (Minckler), **16**: 87-108.
 soil-root relationships of grasses (Weaver and Darland), **19**: 325-327.
 succession in, Black Forest region, Colorado (Livingston), **19**: 123-144.
 North Carolina (Billings), **8**: 437-499; (Keever), **20**: 229-250.
 Oklahoma (Smith), **10**: 421-484.
 Western Cross Timbers, Texas (Dyksterhuis), **18**: 325-376.
- Abies*, pollen in Minnesota bogs (Artist), **9**: 493-535.
grandis, relation to temporary forest types in Idaho (Larsen), **10**: 1-54.
lasiocarpa, forest arthropods (Fichter), **9**: 183-215.
magnifica (Oosting and Billings), **13**: 259-274.
- Abundance, see also Populations.
 birds, census methods (Kendeigh), **14**: 67-106.
 factors affecting (Kendeigh), **4**: 299-417; (Kendeigh and Baldwin), **7**: 91-123.
 concept (Cain), **2**: 478.
 estuarine and marine fish in Louisiana (Gunter), **8**: 313-346.
 plankton Crustacea on Georges Bank (Whiteley), **18**: 233-264.
 Rotifera (Campbell), **11**: 1-19.
- Acer*, see also Beech-maple; Elm-maple.
rubrum, in deciduous forest (Braun), **6**: 89-149.
saccharum, in deciduous forest (Daubenmire), **6**: 233-268.
 in Wisconsin (Marks), **12**: 113-133; in Wisconsin and upper Michigan (Potzger), **16**: 211-250.
 spp., in forests of Allegheny Plateau (Hough and Forbes), **13**: 299-320.
- Acidity, see Chemical factors; Hydrogen-ion concentration.
- Aceridae of Texas (Isely), **7**: 317-344; **8**: 551-604.
- Activity, see Behavior.
- Adams, Charles C. Introductory note to symposium on Relation of ecology to human welfare—the human situation, **10**: 309-310.
- Adams, Roy Henry. Stratification, diurnal and seasonal migration of the animals in a deciduous forest, **11**: 189-227, 16 fig.
- Adaptations of, animals living in dead logs (Savely), **9**: 321-385.
 crayfish (Roberts), **14**: 359-392.
 desert tortoise (Woodbury and Hardy), **18**: 145-200.
 lizards, Anniella (Miller), **14**: 271-289.
 Uma (Stebbins), **14**: 315-316.
 marine animals to sandy beaches (Pearse *et al.*), **12**: 148.
 nocturnal animals (Park), **10**: 485-536.
 organisms (Roberts), **12**: 361-365.
 salt marsh plants to submergence (Purer), **12**: 81-111.
- Adelina tribolii*, parasitic on flour beetle (Park), **18**: 265-307.
- adenostoma fasciculatum* in chaparral (Bauer), **6**: 409-454.
- Aedes*, see Mosquitoes.
- Activation of slider turtle (Cagle), **20**: 31-54.
- Africa, termite nests, see Termite.
- Agar, digestion by bacteria (Humm), **12**: 165-167.
- Aggregation (Roberts), **12**: 351, 382.
 behavior of *Storeria dekayi* and other snakes, with especial reference to the sense organs involved (Noble and Clausen), **6**: 269-316, 15 fig.
 effect on rotifers (Edmondson), **16**: 369-370.
 of catfish, role of sense organs (Bowen), **1**: 1-35.
 of bees (Pearson), **3**: 373-441.
- Agriculture, relation to human ecology (Thornthwaite), **10**: 343-348.
 to insect outbreaks (Chapman), **9**: 261-269.
- Agropyron*, see also Grasses; Grassland; Prairie.
smithii, role in recovery of grassland from drought (Weaver), **20**: 251-270.
spicatum, in Montana (Heady), **20**: 55-81.
 in Washington and Idaho (Daubenmire), **12**: 53-79.
- Airplane, application of DDT on forest (Hoffman *et al.*), **19**: 1-46.
- Air-space tissues in salt marsh plants (Purer), **12**: 95-110.
- Alabama, distribution of Protozoa (Lackey), **8**: 501-527.
 dragonflies of Gulf coast marshes (Wright) **13**: 481-497.
 vegetation on granitic flat-rocks (McVaugh), **13**: 119-165.
- Alaska, vegetation of Prince William Sound region, and post-Pleistocene climatic history (Cooper), **12**: 1-22.
- Alberta, mixed prairie (Coupland), **20**: 271-315.
 northern bison (Soper), **11**: 347-412.
- Albertson, F. W. Ecology of mixed prairie in west central Kansas, **7**: 481-547, 41 fig.
 and J. E. Weaver. Effects of drought, dust, and intensity of grazing on cover and yield of short-grass pastures, **14**: 1-29, 24 fig.
 History of the native vegetation of western Kansas during seven years of continuous drought, **12**: 23-51, 34 fig.
 Injury and death or recovery of trees in prairie climate, **15**: 393-434, 62 fig.
 Reduction of ungrazed mixed prairie to short grass as a result of drought and dust, **16**: 449-463, 17 fig.
 coauthor, see Weaver, J. E.
- Algae, see also Plankton.
 of marine sandy beaches at Beaufort, North Carolina (Humm), **12**: 171-174.
- Alkalinity, see Chemical factors.
- Allee, W. C. Concerning the organization of marine coastal communities, symposium paper, **4**: 541-554, 1 fig.
- Allegheny Plateau forests (Hough and Forbes), **13**: 299-320.
- Allen, Durward L. Ecological studies on the vertebrate fauna of a 500-acre farm in Kalamazoo County, Michigan, **8**: 347-436, 28 fig.
- Alpine belt, root habits of plants (Holeh *et al.*), **11**: 327-345.
 grassland (Costello) **14**: 116-117.
 plant succession on James Peak, Colorado (Cox), **3**: 299-372, 12 fig.
 tundra, see Tundra.

- Altitude, relation to distribution, of Cladocera and Copepoda (Carl), **10**: 55-110.
 of salamanders (Hairston), **19**: 53-59.
- Ameriurus melas*, aggregations, role of sense organs (Bowen), **1**: 1-35.
- America, see Boreal America; North America.
- Amphibia, see also Animals.
 ecology, especially their parasites (Holl), **2**: 83-107.
 frogs and toads of North Carolina, parasites of (Brandt), **6**: 491-532.
 salamanders, of North Carolina, parasites of (Rankin), **7**: 169-269.
 of southern Appalachians (Hairston), **19**: 47-73.
- Anaerobiosis in bottom fauna of lakes (Deevey), **11**: 413-455.
- Analysis of repeat records of banded white-throated sparrows (Borror), **18**: 411-430, 4 fig.
- Analytical study of population growth in *Drosophila melanogaster* (Chiang and Hodson), **20**: 173-206, 32 fig.
- Andropogon*, see also Grasses; Grassland; Prairie.
furcatus and *A. scoparius* (Weaver and Fitzpatrick), **4**: 109-295; effect of drought (Albertson and Weaver), **12**: 23-51; in mixed prairie of Kansas (Albertson), **7**: 481-547.
saccharoides and *A. scoparius* in Fort Worth Prairie (Dyksterhuis), **16**: 1-29.
scoparius, see also *A. furcatus* and *A. saccharoides*.
 role in grassland succession (Weaver and Bruner), **15**: 297-319.
- Animal(s), see also Vertebrates; Invertebrates; Communities; Life histories.
 aquatic, see also Marine animals; Fish; Isopoda; Plankton; Salamanders; Snails; *Cambarus*; *Pseudemys*.
 fate when carried by streams into lakes (Dendy), **14**: 333-357.
 of Flathead Lake (Young), **5**: 91-163.
 of lake bottom (Deevey), **11**: 413-455; (Eggleston), **1**: 231-331; (Moore), **9**: 537-582.
 symposium (Krogh *et al.*), **4**: 419-498, 7 fig.
 behavior (Roberts), **12**: 339-412.
 census of two pastures and a meadow in northern New York (Wolcott), **7**: 1-90.
 dung, see Dung.
 ecology, relation to human ecology (Hollingshead), **10**: 354-366.
 of abandoned farmlands in Oklahoma (Smith), **10**: 421-484.
 of Brazilian forest, annual cycle (Davis), **15**: 243-296.
 of grazed and ungrazed woodland (Dambach), **14**: 255-270.
 of Michigan farm (Allen), **8**: 347-436.
 of Zion Canyon (Woodbury), **3**: 147-245.
 phenology (Leopold and Jones), **17**: 81-122.
 prey of owl (Tinbergen), **3**: 443-492.
 stratification in deciduous forest (Adams), **11**: 189-227.
- Anniella pulchra*, ecologic relations and adaptations (Miller), **14**: 271-289.
- Annual, see also Seasonal.
 cycle of plants, mosquitoes, birds, and mammals in two Brazilian forests (Davis), **15**: 243-296, 24 fig.
 growth of, pine, effect of rainfall and temperature (Coile), **6**: 533-562.
 timber trees, effect of precipitation (Schumacher and Day), **9**: 387-429.
- [Annual] [growth of]
 trees of Hudson Bay region (Marr), **18**: 117-144.
 limnological cycles in some Colorado reservoir lake (Pennak), **19**: 233-267, 26 fig.
- Annals, increase in prairie following drought (Robertson), **9**: 431-491.
- Anoka Sand Plain, see Minnesota.
- Anopheles*, see Mosquitoes.
- Ant, see *Formica*.
- Antelope, see *Antilocapra*.
- Antilocapra a. americana* in northern desert shrub biome (Fautin), **16**: 251-310.
- Appalachian Mountains, see also Cumberland Mountains.
 evolution of Carabidae (Darlington), **13**: 37-47.
 perpetuation of spruce on cut-over lands (Kestian), **7**: 125-167.
 plethodontid salamanders (Hairston), **19**: 47-73.
 vegetation, of Roan Mountain (Brown), **11**: 697; on granitic flat-rocks (McVaugh), **12**: 119-165.
 Valley, see Tennessee.
- Apparatus, see Instruments.
- Aquatic, see also Marine.
 animals, see Animals.
 communities, biotic, of Medicine Bow Mountains (Blake), **15**: 213-223; of region near Churchill Manitoba (McClure), **13**: 1-35.
 habitats, see Chemical factors; Physical factors.
- Mollusca of the Tippecanoe River system. Part I.
 Post-glacial migration and present distribution of four species of snails (Wright), **2**: 233-259, 14 fig.
- plants, see Aquatic vegetation; Plankton; *Piaropus*; *Spirodela*.
- populations, symposium (Park *et al.*), **16**: 311-357.
 vegetation, effect on plankton in streams (Chandler), **7**: 445-479.
 in bogs (Gates), **12**: 213-254.
 in Wisconsin lakes (Wilson), **5**: 207-247.
 of Nebraska sand-hill region (Tolstead), **12**: 267-270.
 relation to physical-chemical variables (Oosting), **3**: 493-533.
- Arachnida, see Invertebrates; Arthropods; Linguatulids.
- Areas, floristic, origin and development, symposium (Just *et al.*), **17**: 123-234.
- Arid southeast Oahu vegetation, Hawaii (Egler), **14**: 383-435, 41 fig.
- Aristida*, see also Prairie.
stricta, in succession on North Carolina coastal plain sands (Wells and Shunk), **1**: 465-520.
- Arizona, see also Sonoran Desert.
 biotic communities of Kaibab Plateau (Rasmussen), **11**: 229-275.
 effect of herbaceous vegetation on regeneration of ponderosa pine (Pearson), **12**: 315-338.
 mountain climates (Baker), **14**: 223-254.
 osmotic value of cell sap of *Larrea tridentata* (Mallery), **5**: 1-35.
- Arkansas, effect of rainfall and temperature on growth of pine (Coile), **6**: 533-562.
- Artemisia cana*, in North Dakota (Hanson and Whelan), **6**: 75-78, 102-103.
- spp., and associated forage species (Costello), **14**: 107-134.
 in prairie in Canada (Coupland), **20**: 304.
 in Washington and Idaho (Daubenmire), **12**: 79.

- [*Artemisia*]
tridentata, in desert shrub biome (Fautin), **16**: 251-310.
- Arthropods, see also Invertebrates; Insects.
 of Medicine Bow Mountains (Blake), **15**: 236-238.
 of spruce-fir forest (Fichter), **9**: 183-215.
 succession in cattle droppings (Mohr), **13**: 275-298.
- Artist, Russell C. Pollen spectrum studies on the Anoka Sand Plain in Minnesota, **9**: 493-535, 16 fig.
- Ascoschöngastia indica* (Wharton), **16**: 151-184.
- Ash, see *Frazinus*.
 content of Larrea, relation to soil salts and to cell sap concentration (Mallery), **5**: 1-35.
- Asio o. otus*, host-predator relations (Tinbergen), **3**: 443-492.
- Aspection (in), see also Seasonal.
 beech-maple community (Williams), **6**: 317-408.
 bird population in elm-maple forest (Twomey), **15**: 173-205.
- California salt marsh vegetation (Purer), **12**: 94.
- Colorado sand-hills (Ramaley), **9**: 1-51.
- forests of Tobago, British West Indies (Beard), **14**: 135-163.
- grassland biome (Carpenter), **10**: 617-684.
- Louisiana marshland and associated forest species (Penfound and Hathaway), **8**: 1-56.
- mixed prairie in Canada (Coupland), **20**: 271-315.
- prairie vegetation (Dyksterhuis), **16**: 19-26; (Weaver and Fitzpatrick), **4**: 109-295.
- sand-hill vegetation of Nebraska (Tolstead), **12**: 283-288.
- sessile marine invertebrates (McDougall), **13**: 321-374.
- the biotic communities of the Churchill area, Manitoba (McClure), **13**: 1-35, 24 fig.
- vegetation, of northern Columbia Plateau (Daubenmire), **12**: 66, 72.
 of Western Cross Timbers of Texas (Dyksterhuis), **18**: 325-376.
- Aspects of the, ecology of the iguanid genus *Uma* (Stebbins), **14**: 311-332, 22 fig.
 role of water in insect hibernation (Hodson), **7**: 271-315, 8 fig.
- Aspen association in bogs of Michigan (Gates), **12**: 245.
 community of Minnesota and Wisconsin (Kittredge), **8**: 151-246.
 effect on reforestation in Wisconsin (Stoeckeler and Limstrom), **12**: 201-202.
 forage type in Colorado and Wyoming (Costello), **14**: 119-121.
- Association between revegetation and established vegetation on depleted range (Ellison), **19**: 95-121.
- Associations, floristic, origin and development, symposium (Just *et al.*), **17**: 201-210.
 plant, see Vegetation.
 concepts (Cain), **2**: 475-508.
- Asymmetry in trees of Columbia River gorge (Lawrence), **9**: 217-257.
- Atlantic coastal plain plants in the sand barrens of northwestern Wisconsin (McLaughlin), **2**: 335-383, 31 fig.
- Ocean, *Ceratium* spp. (Graham), **11**: 99-116.
- Atriplex confertifolia* in desert shrub biome (Fautin), **16**: 251-310.
 forage type in Colorado and Wyoming (Costello), **14**: 130.
watsonii, ecology and anatomy (Purer), **12**: 109-110.
- Atrophy of wings in Carabidae in relation to evolution (Darlington), **13**: 37-61.
- Australia, termite nests, see Termite.
- Avalanches, relation to vegetation in Alaska (Cooper), **12**: 8, 17.
- Aves, see Birds.
- Azotobacter chroococcum*, in forest and pasture soil (Stewart), **3**: 121-122.
- Bacteria, marine, distribution and conditions of existence (Waksman), **4**: 523-529.
 nitrogen fixation by, in nodules of *Robinia pseudo-acacia* (Chapman), **5**: 37-60.
 populations of marine sandy beaches, digestion of agar and chitin, and relation to nitrogen cycle (Humm), **12**: 164-171.
- Badger, see *Taxidea*.
- Bahamas, Bimini Island vegetation (Howard), **20**: 317-349.
- Baker, Frederick S. Mountain climates of the western United States, **14**: 223-254, 21 fig.
- Baker, Rollin H. A study of rodent populations on Guam, Mariana Islands, **16**: 393-408, 11 fig.
- Baldwin, S. Prentiss, coauthor, see Kendeigh, S. Charles.
- Ball, Stanley C. Migration of red-breasted nuthatches in Gaspé, **17**: 501-533, 8 fig.
- Bantam Lake, see Connecticut.
- Barrens, see Sand barrens.
- Barrier to marine animals, Santa Cruz Island, California (Hewatt), **16**: 185-208.
 effect on mammal distribution (Hardy), **15**: 71-108.
- Basalt, vegetation on, in Washington and Idaho (Daubenmire), **12**: 53-79; in Idaho (Eggler), **11**: 277-298.
- Bases for temperature zonation in geographical distribution, symposium paper (Hutchins), **17**: 325-335, 8 fig.
- Baskett, Thomas S. Nesting and production of the ring-necked pheasant in north-central Iowa, **17**: 1-30, 20 fig.
- Basswood, see *Tilia*.
- Batis maritima*, ecology and anatomy (Purer), **12**: 98-100.
- Bauer, Harry L. Moisture relations in the chaparral of the Santa Monica Mountains, California, **6**: 409-454, 17 fig.
- Beaches, marine sand, plant and animal life (Pearse *et al.*), **12**: 135-190.
 sand, of Wisconsin lakes, microscopic Metazoan inhabitants (Pennak), **10**: 537-615.
- Beard, J. S. The natural vegetation of the island of Tobago, British West Indies, **14**: 135-163, 11 fig.
- Beauchampia crucigera* (Edmondson), **15**: 141-172.
- Beaufort, see North Carolina.
- Beech, see also *Fagus*.
 -maple climax community, composition and dynamics (Williams), **6**: 317-408.
 woodland in northeastern Ohio, grazed and ungrazed (Dambach), **14**: 255-270.
- Bees, ecological relations in Chicago region (Pearson), **3**: 373-441.
- Beet leafhopper, see Leafhopper.
- Beetles, see Insects; Invertebrates; Carabidae; *Lasioderma*; *Pasalus*; *Phyllophaga*; *Tribolium*.
- Behavior, see also Hibernation; Life histories; Migration; Nocturnalism.
 evolution of, as demonstrated by termite nests (Emerson), **8**: 247-284.

[Behavior]

- of animals in deciduous forest (Adams), **11**: 189-227.
 of birds, role of environment (Kendeigh), **4**: 299-417.
 of catfish, see *Ameiurus*.
 of crayfish, effect of light (Roberts), **14**: 359-392.
 of eastern house wren, breeding and wintering (Kendeigh), **4**: 299-417.
 of fish in Lake Erie (Doan), **12**: 299-302.
 of grasshoppers in relation to plants and soils (Isely), **8**: 551-604.
 of mule deer (Russell), **2**: 1-46.
 of organisms (Roberts), **12**: 339-412, 15 fig.
 of rodents (Storer *et al.*), **14**: 165-192.
 of salamanders (Hairston), **19**: 61-64.
 of sand beach animals (Pearse *et al.*), **12**: 148-156, 162-164.
 of *Storeria dekayi* and other snakes (Noble and Clausen), **6**: 269-316.
 of western fox squirrel (Hicks), **19**: 287-302.
 social, in biotic communities of the Wasatch chaparral (Hayward), **10**: 473-506.
 Benthic, see Bottom.
 Berg, Clifford O. Biology of certain Chironomidae reared from Potamogeton, **20**: 83-101, 26 fig.
 Berkshire Plateau vegetation, Massachusetts (Egler), **10**: 145-192, 5 fig.
Betula lenta and *B. lutea* in forests of Allegheny Plateau (Hough and Forbes), **13**: 299-320.
Bidens pilosa, insect populations of flower heads (Needham), **10**: 431-446.
 "Big Woods" of Minnesota: its structure, and relation to climate, fire, and soils (Daubenmire), **6**: 233-268, 6 fig.
 Billings, William Dwight. The structure and development of old field shortleaf pine stands and certain associated physical properties of the soil, **8**: 437-499, 21 fig.
 coauthor, see Oosting, H. J.
 Bimini Islands, see Bahamas.
 Biochemical relations between marine organisms and their environment, symposium paper (Ketchum), **17**: 309-315, 5 fig.
 Biochemistry of the invertebrates of the sea (Galtsoff), **4**: 481-490, 2 fig.
 Biological control of insect populations (Smith), **9**: 311-320.
 productivity, mathematical formulation (Clarke *et al.*), **16**: 336-337.
 properties of forest soils, effect of charcoal (Tryon), **10**: 81-115.
 Biology of, certain Chironomidae reared from Potamogeton (Berg), **20**: 83-101, 26 fig.
Ostrea rhizophorae in Puerto Rico (Mattox), **19**: 339-356.
 the Isopoda of Michigan (Hatchett), **17**: 47-79, 43 fig.
 the thatching ant, *Formica rufa obscuripes* Forel, in North Dakota (Weber), **5**: 165-206, 6 fig.
 the water hyacinth (Penfound and Earle), **10**: 447-472, 9 fig.
 Biome, see Biotic communities.
 Bionomic studies on the beet leafhopper (Harries and Douglass), **10**: 45-79, 18 fig.
 Biotic and physiographic succession on abandoned eroded farmland (Smith), **10**: 421-484, 1 fig.
 Biotic climax (Daubenmire), **12**: 60, 62, 68.
 communities of, beech-maple climax, composition and dynamics (Williams), **6**: 317-408.

[Biotic] [communities of]

- cedar-hemlock and oak-hickory associations (Dirks Edmunds), **17**: 235-260.
 Churchill region, Manitoba (McClure), **13**: 1-35.
 coast, organization (Allee), **4**: 541-554.
 floodplain of Canadian River (Hefley), **7**: 345-402.
 grassland (Carpenter), **10**: 617-684.
 Kaibab Plateau, Arizona (Rasmussen), **11**: 229-275, 20 fig.
 Massachusetts tidal inlet (Dexter), **17**: 261-294.
 Medicine Bow Mountains (Blake), **15**: 213-236.
 Pacific coast (Shelford *et al.*), **5**: 249-354.
 the northern desert shrub biome in western Utah (Fautin), **16**: 251-310, 19 fig.
 the Wasatch chaparral, Utah (Hayward), **10**: 473-506, 6 fig.
 relationships of Zion Canyon, Utah, with special reference to succession (Woodbury), **3**: 147-245, 29 fig.
 Birch, see *Betula*.
 Bird(s), see also Animals; Hungarian partridge; Nutcratches; Pheasant; Sparrows; *Colinus*; *Nyroca*.
 annual cycle in Brazilian forest (Davis), **15**: 243-296.
 effect on forest insects (Graham), **9**: 301-310.
 feeding on dragonflies (Kennedy), **20**: 103-142.
 heart rate (Odum), **11**: 299-326.
 host-predator relations between *Asio o. otus* and its prey (Tinbergen), **3**: 443-492.
 of deciduous forest (Williams), **6**: 317-408.
 of grazed and ungrazed woodland (Dambach), **14**: 255-270.
 of Kaibab Plateau (Rasmussen), **11**: 229-275.
 of Wasatch chaparral (Hayward), **10**: 473-506.
 passerine, factors affecting yearly abundance (Kendeigh and Baldwin), **7**: 91-123.
 phenology (Leopold and Jones), **17**: 81-122.
 population, effect of climatic and weather factors (Shaver), **3**: 535-597.
 measurement (Kendeigh), **14**: 67-106.
 of an elm-maple forest with special reference to aspect, territorialism, and coactions (Towmey), **15**: 173-205, 12 fig.
 relation to ants (Weber), **5**: 179, 181.
 role in seed germination (Krefting and Roe), **19**: 269-286.
 of environment (Kendeigh), **4**: 299-417.
 Birge, E. A. and C. Juday. Particulate and dissolved organic matter in inland lakes, symposium paper, **4**: 440-474, 4 fig.
Bison bison athabascæ (Soper), **11**: 347-412.
 Black Forest, see Colorado.
 Mountain, see Kentucky.
 Bladderwort, see *Utricularia*.
 Blake, Abigail Kineaid. Viability and germination of seeds and early life history of prairie plants, **5**: 405-460, 14 fig.
 Blake, Irving H. An ecological reconnaissance in the Medicine Bow Mountains, **15**: 207-242, 6 fig.
 Blood of fish, relation to respiration (Powers *et al.*), **2**: 385-473.
 Bloom, plankton, relation to death of marine animals (Gunter *et al.*), **10**: 309-324.
 Blow-outs, vegetation of, in sand dunes (Ramaley), **9**: 18-19; (Tolstead), **12**: 273.
 Bluegrass, see *Poa*.
 Bluestem, see *Andropogon*.
 Bobwhite, see *Colinus*.

- Bogs, see also Marshes; Swamps; Pollen.
in Alaska (Cooper), **12**: 1-22.
of Anoka Sand Plain, Minnesota (Artist), **9**: 493-535.
of central Minnesota (Conway), **19**: 173-206, 19 fig.
of northern lower Michigan (Gates), **12**: 213-254, 32 fig.
of southern New England (Bromley), **5**: 61-89.
- Boreal America, natural floristic areas (Raup), **17**: 221-234.
- Borror, Donald J. Analysis of repeat records of banded white-throated sparrows, **18**: 411-430, 4 fig.
- Bottom communities, marine (Shelford *et al.*), **5**: 249-354.
fauna of lakes (Deevey), **11**: 413-455; (Eggleton), **1**: 231-331; (Moore), **9**: 537-582; (Young), **5**: 139-144.
- Bouteloua*, see also Prairie; Grasses; Grassland.
curtipendula, role in grassland succession (Weaver and Bruner), **15**: 297-319.
and *B. gracilis*, effect of drought (Albertson and Weaver), **12**: 23-51.
gracilis, effect of drought, dust, and grazing (Albertson and Weaver), **14**: 1-29.
in Colorado and Wyoming (Costello), **14**: 107-134.
in mixed prairie of Kansas (Albertson), **7**: 481-547.
relation to reproduction of ponderosa pine (Pearson), **12**: 315-338.
- Bowen, Edith S. The role of the sense organs in aggregations of *Ameriurus melas*, **1**: 1-35, 1 fig.
- Brackish water, see also Salinity.
sponges (de Laubenfels), **17**: 31-46.
- Brandt, B. B. Parasites of certain North Carolina Salientia, **6**: 491-532.
- Braun, E. Lucy. An ecological transect of Black Mountain, Kentucky, **10**: 193-241, 23 fig.
Development of the deciduous forests of eastern North America, symposium paper, **17**: 211-219.
Forests of the Cumberland Mountains, **12**: 413-447, 36 fig.
Forests of the Illinoian till plain of southwestern Ohio, **6**: 89-149, 38 fig.
- Brazil, forests, annual cycle of plants, mosquitoes, birds and mammals (Davis), **15**: 243-296.
- Breeding, see Reproduction.
- Brewer, Howard E. Response of certain legumes to variations in soil and microclimate on eroded areas in southeastern Iowa, **17**: 471-500, 21 fig.
- British Columbia, distribution of Cladocera and Copepoda (Carl), **10**: 55-110.
Vancouver Island, food of black-tailed deer (Cowan), **15**: 109-139; marine biotic communities (Shelford *et al.*), **5**: 249-354.
Guiana, termite nests, see Termite.
West Indies, see Bahamas; Jamaica; Tobago.
- Bromley, Stanley W. The original forest types of southern New England, **5**: 61-89, 8 fig.
- Bromus*, see also Grasses; Grassland; Prairie.
tectorum, in climax prairie (Daubenmire), **12**: 75-76.
- Brooks, John Langdon. Cyclomorphosis in *Daphnia*. I. An analysis of *D. retrocurva* and *D. galeata*, **16**: 409-447, 18 fig.
- Brown, Dalton Milford. Vegetation of Roan Mountain: a phyto-sociological and successional study, **11**: 61-97, 35 fig.
- Browse-shrub forage type (Costello), **14**: 107-134.
- Bruner, W. E. The vegetation of Oklahoma, **1**: 99-188, 31 fig.
coauthor, see Weaver, J. E.
- Buchloe*, see also *Bulbilis*; Grasses; Grassland; Prairie.
dactyloides, effect of drought (Albertson and Weaver), **12**: 23-51.
effect of drought, dust and grazing (Albertson and Weaver), **14**: 1-29.
in Colorado (Costello), **14**: 107-134.
- Buffalo, see *Bison*.
grass, see *Buchloe*; *Bulbilis*.
- Bulbilis*, see also *Buchloe*.
dactyloides, in mixed prairie of Kansas (Albertson), **7**: 481-547.
- Bullhead, see *Ameiurus*.
- Burning, see Fire.
- Burrowing, of sandy beach animals (Pearse *et al.*), **12**: 150.
- Busyon* spp., at Beaufort, North Carolina (Magalhaes), **18**: 377-409.
- Cagle, Fred R. The life history of the slider turtle, *Pseudemys scripta troostii* (Holbrook), **20**: 31-54, 18 fig.
- Cain, Stanley A. Characteristics of natural areas and factors in their development, symposium paper, **17**: 185-200.
Concerning certain phytosociological concepts, **2**: 475-508, 10 fig.
- Calamagrostis*, see also Grassland; Prairie.
association in Michigan bogs (Gates), **12**: 236.
- Calcium, see Chemical factors.
- Caliche, relation to osmotic value of cell sap in *Larrea* (Mallery), **5**: 1-35.
- California, see also Sonoran Desert.
coastal sand dune plants (Purer), **6**: 1-87.
lizards, *Anniella* (Miller), **14**: 271-289; *Uma* (Stebbins), **14**: 311-332.
mountain climates (Baker), **14**: 223-254.
San Diego County, coastal salt marsh vegetation (Purer), **12**: 81-111.
Santa Cruz Island, marine animals (Hewatt), **16**: 185-208; shrimps (Schmitt), **16**: 208-210.
Santa Monica Mountains, moisture relations in chaparral (Bauer), **6**: 409-454.
seasonal migration of mule deer (Russell), **2**: 1-46.
Sierra Nevada, red fir forest (Oosting and Billings), **13**: 259-274; rodent populations (Storer *et al.*), **14**: 165-192.
- Cambarus virilis*, community activity regulation (Roberts), **14**: 359-392.
- Camp, W. H. Distribution patterns in modern plants and the problems of ancient dispersals, symposium paper, **17**: 159-183, 32 fig.
Foreword to symposium on Origin and development of natural floristic areas. . . , **17**: 125-126.
- Campbell, Robert S. Vertical distribution of the plankton Rotifera in Douglas Lake Michigan, with special reference to submerged depression individuality, **11**: 1-19, 8 fig.
- Campeloma*, see Snails.
- Canadian River, Oklahoma, vegetation and insects of floodplain (Hefley), **7**: 345-402.
- Canis latrans* in desert shrub biome (Fautin), **16**: 251-310.
- Canopy, percentage composition (Braun), **10**: 193-241.
- Canthocamptus staphylinoides*, cysts (Moore), **9**: 576.
- Captivity, effect on wild birds (Odum), **11**: 299-326.

- Carabia, J. P. The vegetation of Sierra de Nipe, Cuba, **15**: 321-341, 26 fig.
- Carabidae of mountains and islands: data on the evolution of isolated faunas, and on atrophy of wings (Darlington), **13**: 37-61, 8 fig.
- Carbon dioxide, see also Chemical factors.
tension of fish blood (Powers *et al.*), **2**: 385-473.
- Carex, see Bogs; Marshes; Swamps; Prairie.
- Carl, G. Clifford. The distribution of some Cladocera and free-living Copepoda in British Columbia, **10**: 55-110, 14 fig.
- Carpenter, J. Richard. The grassland biome, **10**: 617-684, 7 fig.
- Carpenter, Stanley J., coauthor, see Jenkins, Dale W.
- Carrizo sands, see Texas.
- Cascade Mountains, climate (Baker), **14**: 228-236.
- Castanea dentata*, importance in forests of Black Mountain, Kentucky (Braun), **10**: 193-241.
- Castes, see Termite.
- Catalpa speciosa*, effect of *Robinia pseudoacacia* on growth (Chapman), **5**: 37-60.
- Catastrophic mass mortality of marine animals and coincident phytoplankton bloom on the west coast of Florida, November 1946 to August 1947 (Gunter *et al.*), **18**: 309-324, 2 fig.
- Catfish, see *Ameiurus*.
- Cattail, see Bogs; Marshes; Swamps.
- Cattle droppings as ecological units (Mohr), **13**: 275-298, 4 fig.
- Causes of succession on old fields of the Piedmont, North Carolina (Keever), **20**: 229-250, 6 fig.
- Ceanothus macrocarpus* in chaparral (Bauer), **6**: 409-454.
- Cedar, see *Chamaecyparis*; *Juniperus*; *Thuja*.
- Cell sap, osmotic value in *Larrea* (Mallery), **5**: 1-35.
- Celtis occidentalis* in prairie climate (Albertson and Weaver), **15**: 393-434.
- Census, see also Populations.
animal, of pastures and meadow in northern New York (Wolcott), **7**: 1-90.
methods, birds (Kendeigh) **14**: 67-106; (Shaver), **3**: 535-597.
- Centers of origin, see Origin.
- Ceratium* spp., distribution in ocean (Graham), **11**: 99-116.
- Chamaecyparis nootkatensis* in Alaska (Cooper), **12**: 1-22.
- Chandler, David C. Fate of typical lake plankton in streams, **7**: 445-479, 15 fig.
and Owen B. Weeks. Limnological studies of western Lake Erie. V. Relation of limnological and meteorological conditions to the production of phytoplankton in 1942, **15**: 435-457, 4 fig.
- Chaney, Ralph W. Tertiary centers and migration routes, symposium paper, **17**: 139-148.
- Changes in the osmotic value of the expressed sap of leaves and small twigs of *Larrea tridentata* as influenced by environmental conditions (Mallery), **5**: 1-35, 5 fig.
- Chaparral in, California, moisture relations (Bauer), **6**: 409-454.
Colorado, Black Forest region (Livingston), **19**: 123-144.
Pike's Peak region (Whitfield), **3**: 75-105.
Oklahoma (Bruner), **1**: 154-158.
Wasatch Mountains, biotic communities (Hayward), **18**: 473-506.
Zion Canyon (Woodbury), **3**: 147-245.
- Chapman, A. G. The effects of black locust on associated species with special reference to forest trees, **5**: 37-60, 12 fig.
- Chapman, Royal N. Insect population problems in relation to insect outbreak, symposium paper, **9**: 261-269.
- Characteristics of major grassland types in western North Dakota (Hanson and Whitman), **8**: 57-114, 12 fig.
of natural areas and factors in their development, symposium paper (Cain), **17**: 185-200.
- Charcoal, effect on chemical, physical and biological properties of forest soils (Tryon), **18**: 81-115.
- Cheatgrass, see *Bromus*.
- Chemical factors in, a Minnesota lake (Oosting), **3**: 493-533.
Douglas Lake (Campbell), **11**: 1-19.
lake water, see also Lakes; Limnological; Stratification.
ocean, see Ocean; Marine; Mineral elements; Nutrient salts; Salinity; Copper; Manganese.
relation to, activity of crayfish (Roberts), **14**: 359-392.
distribution, of Cladocera and Copepoda (Carl), **10**: 55-110; of Protozoa (Lackey), **8**: 501-527.
fresh-water plankton populations (Pennak), **16**: 346-348.
respiration of fish (Powers *et al.*), **2**: 385-473.
Rotatoria (Edmondson), **14**: 31-66; **15**: 141-172; **16**: 357-372.
sponges of Wisconsin lakes (Jewell), **5**: 461-504.
soil, see Charcoal; Chloride.
upper Mississippi River (Reinhard), **1**: 395-464.
water of lake sand beaches (Pennak), **10**: 537-615.
- Chemicals, use in mesquite eradication (Fisher *et al.*), **16**: 109-126.
- Cherry County, see Nebraska.
- Chestnut, see *Castanea*.
- Chiang, H. C. and A. C. Hodson. An analytical study of population growth in *Drosophila melanogaster*, **20**: 173-206, 32 fig.
- Chicago, see Illinois.
- Chiggers, see *Ascoschoenastia*.
- Chipmunk, see *Eutamias*.
- Chironomidae reared from Potamogeton (Berg), **20**: 83-101.
- Chironomus* in lake bottom fauna (Deevey), **11**: 413-455.
- Chitin, digestion by bacteria (Humm), **12**: 167-168.
- Chloride content of soils in prairie (Robertson), **9**: 431-491.
- Chlorides in lakes, see Chemical factors.
- Chlorophyll in pond (Riley), **10**: 285-287.
- Churchill, see Manitoba.
- Cinders, see Volcanic.
- Citellus beecheyi* populations in Sierra Nevada (Storer *et al.*), **14**: 165-192.
- Cladocera, see also Plankton; *Daphnia*.
distribution in British Columbia (Carl), **10**: 55-110.
in Douglas Lake (Moore), **9**: 551-553.
- Clark, Orin Ray. Interception of rainfall by prairie grasses, weeds and certain crop plants, **10**: 243-277, 8 fig.
- Clarke, George L. Dynamics of production in a marine area, symposium paper, **16**: 321-335, 9 fig.
Factors affecting the vertical distribution of copepods, symposium paper, **4**: 530-540, 3 fig.
W. T. Edmondson and W. E. Ricker. Mathematical

- [Clarke, George L., W. T. Edmondson, W. E. Ricker]
formulation of biological productivity, symposium paper, **16**: 336-337.
- Clausen, H. J., coauthor, see Noble, G. K.
- Clay, root development in (Duncan), **11**: 141-164.
- Claypan, relation to root development of grasses (Weaver and Darland), **19**: 303-338.
- Cleveland, see Ohio; Oklahoma.
- Climate, see also Weather.
change, evidence from zonation of vegetation of bog margins (Conway), **19**: 173-206.
postglacial, in Minnesota (Artist), **9**: 493-535.
relation to plant distribution (Just), **17**: 127-137.
of Brazilian forests (Davis), **15**: 243-296.
of Churchill region, Manitoba (McClure), **13**: 1-35.
of east coast of Hudson Bay beyond tree limit (Marr), **18**: 117-144.
of mountains of western United States (Baker), **14**: 223-254.
of prairie, see also Prairie.
(Carpenter), **10**: 617-684; (Weaver and Fitzpatrick), **4**: 109-295.
in Wisconsin (Thomson), **10**: 685-717.
injury of trees (Albertson and Weaver), **15**: 393-434.
postglacial variations in Kashmir and Indian Tibet (Hutchinson), **9**: 145-182.
relation to, fluctuations in bird populations (Ken-deigh and Baldwin), **7**: 91-123.
human ecology (Thornthwaite), **10**: 343-348.
stratification of forest arthropods (Fichter), **9**: 183-215.
structure of "Big Woods" of Minnesota (Dau-benmire), **6**: 233-268.
vegetation of Carrizo sands, Texas (McBryde), **3**: 247-297.
- Climax community, beech-maple, composition and dynamics (Williams), **6**: 317-408.
forest in Cumberland Mountains (Braun), **12**: 446.
in Prince William Sound region, Alaska (Cooper), **12**: 1-22.
in Lake Forest formation, relic and paleobotanical evidence (Patzger), **16**: 211-250.
of bog areas of northern lower Michigan (Gates), **12**: 243.
vegetation, Black Mountain, Kentucky (Braun), **10**: 193-241.
Western Cross Timbers, Texas (Dyksterhuis), **10**: 325-376.
- Clipping, effect on Sudan grass (de Peralta), **5**: 355-404.
- Coactions, see also Life histories; Biotic communities;
Food cycles.
food, of red fox (Scott), **13**: 427-479.
in bird population in elm-maple forest (Twomey), **15**: 173-205.
- Coast, see also Marine; Tidal; Tide.
forest, Vancouver Island, food of black-tailed deer (Cowan), **15**: 109-139.
of Hudson Bay, forest-tundra ecotone (Marr), **18**: 117-144.
Pacific, salt marsh vegetation (Purer), **12**: 81-111.
Ranges, climate, see Mountains.
Santa Monica, see California.
- Coastal plain, Georgia, Okefinokee Swamp vegetation (Wright and Wright), **2**: 109-232.
North Carolina, vegetation and habitat factors (Wells and Shunk), **1**: 465-520.
plants in sand barrens of northwestern Wisconsin (McLaughlin), **2**: 335-383.
- [Coastal]
sand dune plants of southern California (Purer), **6**: 1-87.
vegetation of Bimini Islands (Howard), **20**: 317-349.
of Cuba (Seifriz), **13**: 375-426.
of Tobago, British West Indies (Beard), **14**: 153-154.
- Coconut plantations on Guadalcanal (Pendleton), **19**: 91-92.
- Coile, T. S. The effect of rainfall and temperature on the annual radial growth of pine in the southern United States, **6**: 533-562, 22 fig.
- Cold, see Freezing; Temperature.
- Cole, Lamont C. A study of the cryptozoa of an Illinois woodland, **16**: 49-86, 8 fig.
- Colinus virginianus*, population phenomena (Errington), **15**: 1-34.
- Collection of shrimps from Santa Cruz Island, California (Schmitt), **16**: 208-210.
- Collotheca gracilipes* (Edmondson), **15**: 141-172.
- Colombia, Santa Marta Mountains, evolution of Carabi-dae (Darlington), **13**: 37-61.
- Colonies, sessile Rotatoria (Edmondson), **15**: 141-172.
- thatching ant, in North Dakota (Weber), **5**: 165-206.
- Color, see also Physical factors; Protective coloration.
of ocean water caused by phytoplankton bloom (Gunter *et al.*), **10**: 309-324.
- Colorado, Black Forest vegetation (Livingston), **19**: 123-144.
development of roots of lodgepole pine (Preston), **12**: 449-468.
dynamics of plankton populations (Pennak), **16**: 339-355.
eastern, injury of trees by drought (Albertson and Weaver), **15**: 393-434.
important species of major forage types (Costello), **14**: 107-134.
James Peak, alpine plant succession (Cox), **3**: 299-372.
mountain climates (Baker), **14**: 223-254.
Pike's Peak vegetation (Whitfield), **3**: 75-105.
recovery of grassland from drought (Weaver and Albertson), **14**: 393-479.
reservoir lakes, annual limnological cycles (Pennak), **19**: 233-267.
root habits of plants (Holeh *et al.*), **11**: 327-345.
vegetation of sand-hills (Ramaley), **9**: 1-51.
- Columbia Plateau, see Washington, Palouse.
- Columbia River, see Oregon.
- Commensals of desert tortoise (Woodbury and Hardy), **10**: 145-200.
of *Passalus cornutus* (Pearse *et al.*), **6**: 455-490.
- Communities, see also Animals; Vegetation; Populations.
aquatic plants, Wisconsin (Wilson), **5**: 207-247.
aspen, Minnesota and Wisconsin (Kittredge), **8**: 151-246.
biotic, see Biotic.
nocturnal portion (Park), **10**: 485-536.
of arthropods, see Arthropods.
of bees in Chicago region (Pearson), **3**: 373-441.
of insects in dead logs (Savely), **9**: 321-385.
in flower heads of *Bidens pilosa* (Needham), **18**: 431-446.
of mammals on north slope of Uinta Mountains (Svihla), **2**: 47-81.
plant, concepts (Cain), **2**: 475-508.
relation to human welfare (Shantz), **10**: 311-342.
Community activity of crayfish (Roberts), **14**: 359-392.
study of a disturbed deciduous forest area near

[Community]

- Cleveland, Ohio, with special reference to invertebrates (Dowdy), **14**: 193-222, 10 fig.
- Comparison of biotic communities of the cedar-hemlock and oak-hickory associations (Dirks-Edmunds), **17**: 235-260, 10 fig.
- of the dragonfly fauna of the lower delta of the Mississippi River with that of the marshes of the central Gulf coast (Wright), **13**: 481-497, 1 fig.
- Competition among sessile marine invertebrates (McDougall), **13**: 321-374.
- between bobwhite and other birds (Errington), **15**: 17-19.
- grasses and ponderosa pine seedlings (Pearson), **12**: 315-338.
- Ostrea rhizophorae* and other animals (Mattox), **19**: 348-349.
- prairie grasses and trees (Albertson and Weaver), **15**: 411-412.
- effect on growth of longleaf pine seedlings (Pessin), **8**: 115-149.
- on succession (Keever), **20**: 229-250.
- interspecies, in populations of flour beetles (Park), **18**: 265-307.
- intraspecific, role in haddock population (Herrington), **17**: 317-323.
- principles, illustrated by Sudan grass (de Peralta), **5**: 355-404.
- relation to light and water in Piedmont forest (Koslowski), **19**: 207-231.
- role in stabilization of grassland (Weaver), **20**: 251-270.
- Composition and dynamics of a beech-maple climax community (Williams), **6**: 317-408, 16 fig.
- Concepts, phytosociological (Cain), **2**: 475-508.
- Concerning certain phytosociological concepts (Cain), **2**: 475-508, 10 fig.
- the organization of marine coastal communities, symposium paper (Allee), **4**: 541-554, 1 fig.
- Conditions of existence of aquatic animals, symposium (Krogh *et al.*), **4**: 419-498.
- of life at great depths in the ocean, symposium paper (Krogh), **4**: 430-439.
- of life in the ocean, symposium paper (Krogh), **4**: 421-429.
- Coniferous forest, see Forest.
- Conifers, see also *Abies*; *Picea*; *Pinus*; etc.
- water relations of seedlings (Marshall), **1**: 37-98.
- Connecticut, Bantam Lake, cyclomorphosis in *Daphnia* (Brooks), **16**: 409-447.
- effect of charcoal on forest soil (Tryon), **18**: 81-115.
- lakes, bottom fauna (Deevey), **11**: 413-455.
- limnology (Riley), **9**: 53-94.
- mechanisms of intermediary metabolism (Hutchinson), **11**: 21-60.
- plankton of Linsley Pond (Riley), **10**: 279-306.
- original forest types (Bromley), **5**: 61-89.
- role of copper in life history of oyster (Prytherch), **4**: 47-107.
- sessile Rotatoria (Edmondson), distribution, **14**: 31-66; population dynamics and social structure, **15**: 141-172.
- vegetation of tidal-marshes (Miller and Egler), **20**: 143-172.
- Consciousness (Roberts), **12**: 401-404.
- Constance (Cain), **2**: 496.
- Contributions from the land in determining conditions of life in the sea, symposium paper (Nelson), **17**: 337-346, 7 fig.
- of a fifteen-year local study of the northern bobwhite to a knowledge of population phenomena (Errington), **15**: 1-34, 23 fig.
- Control, see also Weeds.
- biological, of insect populations (Smith), **9**: 311-320.
- of *Lasioderma serricorne* infesting tobacco (Powell), **1**: 333-393; correction, **2**: 384.
- of mesquite (Fisher *et al.*), **16**: 109-126.
- of mosquitoes by mosquitofish (Krumholz), **18**: 1-43.
- of oyster "leech" in Florida (Pearse and Wharton), **8**: 605-655.
- of water hyacinth (Penfound and Earle), **18**: 447-472.
- Controlled laboratory experiments, faith in results as applied in nature (Shelford), **4**: 491-498.
- Convergence in evolution of behavior (Roberts), **12**: 386.
- Conway, Verona M. The bogs of central Minnesota, **19**: 173-206, 19 fig.
- Coon Valley, see Wisconsin.
- Cooper, William S. Vegetation of the Prince William Sound region, Alaska; with a brief excursion into post-Pleistocene climatic history, **12**: 1-22, 14 fig.
- Copepoda, see also Plankton.
- cysts, in Douglas Lake (Moore), **9**: 553-576.
- distribution in British Columbia (Carl), **10**: 55-110.
- in sand of Wisconsin lake beaches (Pennak), **10**: 537-615.
- vertical distribution (Clarke), **4**: 530-540.
- Copper in Connecticut lakes (Riley), **9**: 53-94.
- role in setting, metamorphosis and distribution of oyster (Prytherch), **4**: 47-107.
- Cornelius, Donald R. Seed production of native grasses under cultivation in eastern Kansas, **20**: 1-29, 8 fig.
- Costello, David F. Important species of the major forage types in Colorado and Wyoming, **14**: 107-134, 20 fig.
- Coupland, Robert T. Ecology of mixed prairie in Canada, **20**: 271-315, 32 fig.
- Cover, in short-grass pastures, effect of drought, dust and grazing (Albertson and Weaver), **14**: 1-29.
- relation to, animal populations on Michigan farm (Allen), **8**: 347-436.
- development and survival of white pine (Smith), **10**: 373-420.
- Covillea*, see *Larrea*.
- Cowan, Ian McTaggart. The ecological relationships of the food of the Columbian black-tailed deer, *Odocoileus hemionus columbianus* (Richardson), in the coast forest region of southern Vancouver Island, British Columbia, **15**: 109-139, 17 fig.
- Cox, Clare Francis. Alpine plant succession on James Peak, Colorado, **3**: 299-372, 12 fig.
- Coyote, see *Canis*.
- Crab, mole, see *Emerita*.
- Crabb, Wilfred D. The ecology and management of the prairie spotted skunk in Iowa, **18**: 201-232, 41 fig.
- Crane-flies, distribution in Florida (Rogers), **3**: 1-74.
- Crayfish, see *Cambarus*.
- Creosote bush, see *Larrea*.
- Crop plants, see also Legumes.
- interception of rainfall (Clark), **10**: 243-277.
- Cross Timbers, see Oklahoma; Texas.

- Crow, relation to ants (Weber), **5**: 181.
- Crustacea, see also Invertebrates.
 planktonic, distribution on Georges Bank (Whiteley), **18**: 233-264.
- Cryptozoa of Illinois woodland (Cole), **16**: 49-86.
- Crystal formation in fish blood (Powers *et al.*), **2**: 385-473.
- Cuba, evolution of Carabidae (Darlington), **13**: 37-61.
 plant life (Seifrizz), **13**: 375-426.
 vegetation of Sierra de Nipe (Carabia), **15**: 321-341.
- Culture, differentiation between human and animal society (Hollingshead), **10**: 354-366.
- Cumberland Mountains, vegetation (Braun), **10**: 193-241; **12**: 413-447.
- Currents, see also Physical factors.
 effect on, distribution of *Ceratum* (Graham), **11**: 99-116.
 organisms in Flathead Lake (Young), **5**: 91-163.
 relation to, metabolism in lakes (Hutchinson), **11**: 21-60.
 sessile marine invertebrates (McDougall), **13**: 321-374.
- Cut-over land, see Logging.
- Cycles, see Annual; Seasonal; Diurnal; Periodicity.
- Cyclomorphosis in *Daphnia*. I. An analysis of *D. retrocurva* and *D. galeata* (Brooks), **16**: 409-447, 18 fig.
- Cyclops bicuspidatus*, cysts (Moore), **9**: 555-576.
- Cypress in Louisiana marshlands (Penfound and Hathaway), **8**: 1-56.
 in Okefinokee Swamp (Wright and Wright), **2**: 129-153.
- Cysts, copepod, in Douglas Lake (Moore), **9**: 553-576.
- Dambach, Charles A. A ten-year ecological study of adjoining grazed and ungrazed woodlands in northeastern Ohio, **14**: 255-270, 9 fig.
- Dane County, see Wisconsin.
- Daphnia* spp., cyclomorphosis (Brooks), **16**: 409-447.
- Darkness, see Nocturnalism.
- Darland, R. W., coauthor, see Weaver, J. E.
- Darlington, P. J., Jr. Carabidae of mountains and islands: data on the evolution of isolated faunas, and on atrophy of wings, **13**: 37-61, 8 fig.
- Daubenmire, Rexford F. An ecological study of the vegetation of southeastern Washington and adjacent Idaho, **12**: 53-79, 19 fig.
- The "Big Woods" of Minnesota: its structure, and relation to climate, fire, and soils, **6**: 233-268, 6 fig.
- Davidson, Vera Smith. The effect of seasonal variability upon animal species in total populations in a deciduous forest succession, **2**: 305-333, 13 fig.
- Davis, Charles C., coauthor, see Gunter, Gordon.
- Davis, David E. The annual cycle of plants, mosquitoes, birds, and mammals in two Brazilian forests, **15**: 243-296, 24 fig.
- Day, Besse B., coauthor, see Schumacher, Francis X.
- Daylight, see Light.
- DDT, airplane application on forest (Hoffman *et al.*), **19**: 1-46.
- Death, see also Life histories; Winter-killing.
 of marine animals, relation to phytoplankton bloom (Gunter *et al.*), **18**: 309-324.
 of trees from drought in prairie climate (Albertson and Weaver), **15**: 393-434.
- Decay of roots and shoots, effect on succession (Keever), **20**: 229-250.
- Deciduous forest, development in eastern America (Braun), **17**: 211-219.
 in Minnesota (Daubenmire), **6**: 233-268.
 in Oklahoma (Bruner), **1**: 99-188.
 in southwestern Ohio (Braun), **6**: 89-149.
 invertebrates (Dowdy), **14**: 193-222.
 effect of seasonal variability (Davidson), **2**: 305-333.
 mammals (Williams), **6**: 317-408.
 soil changes in transition to pasture (Stewart), **3**: 107-145.
 stratification and migration of animals (Adams), **11**: 189-227.
 tree hole breeding mosquitoes (Jenkins and Carpenter), **16**: 31-47.
- Deer, see *Odocoileus*.
- Deevey, Edward S. Limnological studies in Connecticut. VI. The quantity and composition of the bottom fauna of thirty-six Connecticut and New York lakes, **11**: 413-455, 45 fig.
- de Laubenfels, M. W. Ecology of the sponges of a brackish water environment at Beaufort, North Carolina, **17**: 31-46, 2 fig.
- Dendy, Jack S. The fate of animals in stream drift when carried into lakes, **14**: 333-357, 14 fig.
- Dens, see also Life histories.
 of desert tortoise (Woodbury and Hardy), **18**: 145-200.
 of prairie spotted skunk (Crabb), **18**: 201-232.
 of raccoon (Stuewer), **13**: 203-257.
- Density (Cain), **2**: 478.
 currents in Connecticut lakes (Hutchinson), **11**: 21-60.
 in forest communities of Chicago region, relation to light intensity at forest floor (Park), **1**: 189-230.
- de Peralta, Fernando. Some principles of competition as illustrated by Sudan grass, *Holcus sorghum sudanensis* (Piper) Hitch., **5**: 355-404, 16 fig.
- Depth, see also Physical factors.
 distribution, see Vertical distribution.
 of depressions in Douglas Lake (Campbell), **11**: 1-19.
- Desert forage species (Costello), **14**: 107-134.
 scrub in Zion Canyon (Woodbury), **3**: 147-245.
 shrub biome communities (Pautin), **16**: 251-310.
- Sonoran, see Sonoran.
- tortoise, see *Gopherus*.
- vegetation, see also *Larrea*.
 of Cuba (Seifrizz), **13**: 375-426.
- Desmognathus* spp. (Hairston), **19**: 47-73; (Rankin), **7**: 169-269.
- Development of, a problem—nocturnalism (Park), **10**: 485-536.
 natural floristic areas, symposium (Just *et al.*), **17**: 123-234.
 pine stands on abandoned fields, and associated soil properties (Billings), **8**: 437-499.
 root systems of juvenile lodgepole pine (Preston), **12**: 449-468.
 roots in three soil types (Duncan), **11**: 141-164.
 the deciduous forests of eastern North America, symposium paper (Braun), **17**: 211-219.
 white pine in New England (Smith), **10**: 373-420.
- Dexter, Ralph W. The marine communities of a tidal inlet at Cape Ann, Massachusetts: a study in bio-ecology, **17**: 261-294, 17 fig.
- Diagrams, see Illustrations, subheading Diagrams.
- Diatoms, see Plankton.
- Dichothermic lake (Newcombe and Slater), **20**: 207-227.

- Didelphis*, see Opossum.
- Differential effect of environmental factors upon *Microbracon hebetor* Say (Hymenoptera: Braconidae) and its host, *Ephestia kuehniella* Zeller (Lepidoptera: Pyralidae), (Payne), **4**: 1-46, 4 fig.
- Digestion, of agar and chitin by bacteria of marine beaches (Humm), **12**: 165.
- Dinoflagellate, see *Ceratium*.
- Dirks-Edmunds, Jane C. A comparison of biotic communities of the cedar-hemlock and oak-hickory associations, **17**: 235-260, 10 fig.
- Disease, see also Yellow fever.
- curly top of beets (Harries and Douglass), **18**: 45-79.
- transmission by mosquitoes (Jenkins and Carpenter), **16**: 31-47.
- Dispersal, adaptations for (Roberts), **12**: 363.
- ancient, relation to distribution of living plants (Camp), **17**: 159-183.
- Cladocera and Copepoda (Carl), **10**: 55-110.
- floras (Just), **17**: 127-137.
- plants of Bimini Islands (Howard), **20**: 317-349.
- seeds and fruits, role of birds and mammals (Krefting and Roe), **19**: 269-286.
- Distichlis*, see also Marshes.
- spicata*, ecology and anatomy (Purer), **12**: 99-102.
- Distribution (of) and conditions of existence of bacteria in the sea, symposium paper (Waksman), **4**: 523-529.
- animals in deciduous forest (Adams), **11**: 189-227.
- birds, role of environment (Kendeigh), **4**: 299-417.
- Ceratium* in ocean (Graham), **11**: 99-116.
- chaparral and grassland in Black Forest region, Colorado (Livingston), **19**: 123-144.
- crane flies in Florida (Rogers), **3**: 1-74.
- cryptozoa in Illinois woodland (Cole), **16**: 49-86.
- existing and fossil plant species (Stebbins), **17**: 149-158.
- geographical, role of temperature zonation (Hutchins), **17**: 325-335.
- grasshoppers in Texas (Isely), **7**: 336-341; **11**: 468-474.
- Hungarian partridge (Yocom), **13**: 167-201.
- Isopoda in Michigan (Hatchett), **17**: 47-79.
- larger planktonic Crustacea on Georges Bank (Whitely), **18**: 233-264, 10 fig.
- mammals, effect of soil (Hardy), **15**: 71-108.
- on north slope of Uinta Mountains (Svihla), **2**: 47-81.
- marine animals, California (Hewatt), **16**: 185-208.
- microfauna of Duke Forest (Pearse), **16**: 127-150.
- oyster, role of copper (Prytherch), **4**: 47-107.
- patterns in modern plants and the problems of ancient dispersals, symposium paper (Camp), **17**: 159-183, 32 fig.
- plankton Rotifera in Douglas Lake (Campbell), **11**: 1-19.
- plants, and geology (Just), **17**: 127-137.
- in Sonoran Desert in relation to freezing weather (Turnage and Hinckley), **8**: 529-550.
- plethodontid salamanders in southern Appalachians (Hairston), **19**: 47-73.
- Protozoa (Lackey), **8**: 501-527.
- sessile Rotatoria, factors affecting (Edmondson), **14**: 31-66.
- snails of Tippecanoe River system (Wright), **2**: 233-259.
- some Cladocera and free-living Copepoda in British Columbia (Carl), **10**: 55-110, 14 fig.
- [Distribution]
- trees, in forest-tundra ecotone of Hudson Bay east coast (Marr), **18**: 117-144.
- vegetation of Oklahoma (Bruner), **1**: 99-188.
- vertical, see Vertical.
- Ditching, effect on vegetation of tidal-marshes (Miller and Egler), **20**: 143-172.
- Diurnal, see also Nocturnalism; Periodicity.
- activity of ants (Weber), **5**: 192-193.
- changes in osmotic value of *Larrea* cell sap (Mallery), **5**: 1-35.
- fluctuations in water content of tops of conifer seedlings (Marshall), **1**: 37-98.
- migration of animals in deciduous forest (Adams), **11**: 189-227.
- variation in daylight intensity (Park), **1**: 189-230.
- Doan, Kenneth H. Some meteorological and limnological conditions as factors in the abundance of certain fishes in Lake Erie, **12**: 293-314, 10 fig.
- Dominance (Cain), **2**: 478.
- Dormancy of prairie plant seeds (Blake), **5**: 405-460.
- Douglas fir, see *Pseudotsuga*.
- Douglas Lake, see Michigan.
- Douglass, J. R., coauthor, see Harries, F. H.
- Dowdy, W. W. A community study of a disturbed deciduous forest area near Cleveland, Ohio, with special reference to invertebrates, **14**: 193-222, 10 fig.
- Dragonflies, food of birds (Kennedy), **20**: 103-142.
- of Gulf coast marshes (Wright), **13**: 481-497.
- Draining, effect on vegetation of peat land (Frolik), **11**: 117-140.
- Droppings, see Dung.
- Dropseed, see *Sporobolus*.
- Drosophila melanogaster*, population growth (Chiang and Hodson), **20**: 173-206.
- Drought, effect on, forest seedling survival (Stoeckeler and Limstrom), **12**: 205-206.
- osmotic value of cell sap in *Larrea* (Mallery), **5**: 1-35.
- white pine seedlings (Smith), **10**: 373-420.
- in prairie, effect on vegetation (Albertson and Weaver), **12**: 23-51; **14**: 1-29; **16**: 449-463; (Robertson), **9**: 431-491; (Weaver and Albertson), **13**: 63-117.
- injury of trees (Albertson and Weaver), **15**: 393-434.
- recovery from (Weaver), **20**: 251-270; (Weaver and Albertson), **14**: 393-479; (Weaver and Bruner), **15**: 297-319.
- in sand-hills of Colorado (Ramaley), **9**: 1-51.
- response of plants (Shantz), **10**: 311-342.
- Ducks, see *Nyroca*.
- Duckweed, see *Spirodela*.
- Duke Forest, see North Carolina.
- Duncan, Wilbur H. A study of root development in three soil types in the Duke Forest, **11**: 141-164, 5 fig.
- Dunes, see Sand dunes; Sand-hills.
- Dung, bird and mammal, viability of seeds from (Krefting and Roe), **19**: 269-286.
- cattle, insect succession in (Mohr), **13**: 275-298.
- red fox, use in analysis of food habits (Scott), **13**: 427-479.
- Dust, effect on short-grass pastures (Albertson and Weaver), **14**: 1-29.
- role in reduction of mixed prairie to short grass (Albertson and Weaver), **16**: 449-463.
- storms (Albertson and Weaver), **12**: 30-31.

Dyksterhuis, E. J. The vegetation of the Fort Worth Prairie, **16**: 1-29, 11 fig.

The vegetation of the Western Cross Timbers, **10**: 325-376, 35 fig.

Dynamics of, beech-maple climax community (Williams), **6**: 317-408.

fresh-water plankton populations, symposium paper (Pennak), **16**: 339-355, 7 fig.

production, in a marine area, symposium paper (Clarke), **16**: 321-335, 9 fig.

in aquatic populations, symposium (Park *et al.*), **16**: 311-391.

rotifer populations (Edmondson), **16**: 357-372.

sessile Rotatoria populations (Edmondson), **15**: 141-172.

Earle, T. T., coauthor, see Penfound, William T.

Ecologic relations and adaptations of the limbless lizards of the genus *Anniella* (Miller), **14**: 271-289, 14 fig.

Ecological distribution of the crane-flies of northern Florida (Rogers), **3**: 1-74, 25 fig.

of the mammals on the north slope of the Uinta Mountains (Svihla), **2**: 47-81, 17 fig.

factors affecting the activity of the western fox squirrel, *Sciurus niger rufiventris* (Geoffroy), (Hicks), **19**: 287-302, 4 fig.

influencing reforestation in northern Wisconsin (Stoeckeler and Limstrom), **12**: 191-212, 16 fig.

life-history of *Spirodela polyrhiza* (greater duckweed) with emphasis on the turion phase (Jacobs), **17**: 437-469, 28 fig.

Light Unit, definition, calculation for communities in Chicago area (Park), **1**: 189-230.

notes on the insect population of the flower heads of *Bidens pilosa* (Needham), **18**: 431-446.

observations on the fishes of Kashmir and Indian Tibet (Hutchinson), **9**: 145-182, 8 fig.

reconnaissance in the Medicine Bow Mountains (Blake), **15**: 207-242, 6 fig.

relations of certain animals in dead pine and oak logs (Savely), **9**: 321-385, 8 fig.

relationships of the food of the Columbian black-tailed deer, *Odocoileus hemionus columbianus* (Richardson), in the coast forest region of southern Vancouver Island, British Columbia (Cowan), **15**: 109-139, 17 fig.

studies of sessile Rotatoria (Edmondson). Part I. Factors affecting distribution, **14**: 31-66, 5 fig. Part II. Dynamics of populations and social structures, **15**: 141-172, 26 fig.

of the Pauropoda of the Duke Forest (Starling), **14**: 291-310, 21 fig.

on the Canadian River floodplain in Cleveland County, Oklahoma (Hefley), **7**: 345-402, 33 fig.

on the vertebrate fauna of a 500-acre farm in Kalamazoo County, Michigan (Allen), **8**: 347-436, 28 fig.

study of, cedar glade invertebrates near Nashville, Tennessee (Meyer), **7**: 403-443, 11 fig.

parasites of some North Carolina salamanders (Rankin), **7**: 169-269, 15 fig.

snails of the genus *Busycon* at Beaufort, North Carolina (Magalhaes), **18**: 377-409, 61 fig.

the Black Forest, Colorado (Livingston), **19**: 123-144, 16 fig.

the fresh-water sponges of northeastern Wisconsin (Jewell), **5**: 461-504, 26 fig.

the tobacco beetle *Lasioderma serricorne* Fabr.,

[Ecological]

with special reference to its life history and control (Powell), **1**: 333-393, 20 fig.; correction **2**: 384.

the vegetation of southeastern Washington and adjacent Idaho (Daubenmire), **12**: 53-79, 19 fig.

Wyoming spruce-fir forest arthropods with special reference to stratification (Fichter), **9**: 183-215, 8 fig.

transect of Black Mountain, Kentucky (Braun), **10**: 193-241, 23 fig.

units, cattle droppings (Mohr), **13**: 275-298.

Ecology, an instrument for the integration of science and philosophy, symposium paper (Lindeman), **10**: 367-372.

and management, of the prairie spotted skunk in Iowa (Crabb), **18**: 201-232, 41 fig.

of the redhead, *Nyroca americana*, in Iowa (Low), **15**: 35-69, 21 fig.

and regional planning (Mackaye), **10**: 349-353.

and silvics of forests in the High Plateaus of Pennsylvania (Hough and Forbes), **13**: 299-320, 20 fig.

human, relation to geography (Thornthwaite), **10**: 343-348.

marine, symposium (Hutchinson *et al.*), **17**: 299-346. of certain fishes and amphibians with special reference to their helminth and linguatulid parasites (Holl), **2**: 83-107, 10 fig.

of lake fishes, symposium paper (Pearse), **4**: 475-480, 1 fig.

of mixed prairie, in Canada (Coupland), **20**: 271-315, 32 fig.

in west central Kansas (Albertson), **7**: 481-547, 41 fig.

of *Passalus cornutus* Fabricius, a beetle which lives in rotting logs (Pearse *et al.*), **6**: 455-490, 43 fig. of populations (Park), **16**: 313-320.

of sand beaches at Beaufort, North Carolina (Pearse *et al.*), **12**: 135-190, 24 fig.

of the forest-tundra ecotone on the east coast of Hudson Bay (Marr), **18**: 117-144, 29 fig.

of the microscopic Metazoa inhabiting the sandy beaches of some Wisconsin lakes (Pennak), **10**: 537-615, 16 fig.

of the sponges of a brackish water environment at Beaufort, North Carolina (de Laubenfels), **17**: 31-46, 2 fig.

of the tree hole breeding mosquitoes of nearctic North America (Jenkins and Carpenter), **16**: 31-47, 5 fig.

plant, concepts and terminology (Cain), **2**: 475-508. relation to human welfare, symposium (Adams *et al.*), **10**: 307-372.

Ecotone, forest-alpine meadow, in Colorado (Cox), **3**: 322-325.

forest-alpine tundra, in Colorado (Whitfield), **3**: 86. forest-desert shrub or grassland (Hayward), **18**: 473-506.

forest-prairie (Carpenter), **10**: 617-684.

effect of prairie climate on trees (Albertson and Weaver), **15**: 393-434.

in Colorado (Livingston), **19**: 139-140.

in Oklahoma (Bruner), **1**: 108-110, 142-158.

in Texas (Dyksterhuis), **18**: 325-376.

in Wisconsin (Marks), **12**: 120-121; (Thomson), **10**: 685-717.

- [Ecotone]
forest-tundra, on east coast of Hudson Bay (Marr), **18**: 117-144.
- Edaphic, see Soil.
- Edmondson, W. T. Ecological studies of sessile Rotatoria. Part I. Factors affecting distribution, **14**: 31-66, 5 fig.; Part II. Dynamics of populations and social structures, **15**: 141-172, 26 fig.
- Factors in the dynamics of rotifer populations, symposium paper, **16**: 357-372, 11 fig.
- coauthor, see Clarke, G. L.
- Effect(s) of, black locust on associated species with special reference to forest trees (Chapman), **5**: 37-60, 12 fig.
- charcoal on certain physical, chemical and biological properties of forest soils (Tryon), **18**: 81-115, 5 fig.
- drought, dust, and intensity of grazing on cover and yield of short-grass pastures (Albertson and Weaver), **14**: 1-29, 24 fig.
- rainfall and temperature on the annual radial growth of pine in the southern United States (Coile), **6**: 533-562, 22 fig.
- seasonal variability upon animal species in total populations in a deciduous forest succession (Davidson), **2**: 305-333, 13 fig.
- vegetation on the growth of longleaf pine seedlings (Pessin), **8**: 115-149, 8 fig.
- Eggler, Willis A. Primary succession on volcanic deposits in southern Idaho, **11**: 277-298, 22 fig.
- Eggleton, Frank E. A limnological study of the profundal bottom fauna of certain fresh-water lakes, **1**: 231-331, 63 fig.
- Eggs, see Life histories.
- Egler, Frank E. Arid southeast Oahu vegetation, Hawaii, **17**: 383-435, 41 fig.
- Berkshire Plateau vegetation, Massachusetts, **10**: 145-192, 5 fig.
- coauthor, see Miller, William R.
- Eleocharis*, see Bogs; Marshes; Swamps.
- Ellison, Lincoln. Establishment of vegetation on depleted subalpine range as influenced by micro-environment, **19**: 95-121, 12 fig.
- Elm, see also *Ulmus*.
- maple forest, bird population, aspection, territorialism, coactions (Twomey), **15**: 173-205.
- Emerita talpoida*, life history and adaptations (Wharton), **12**: 157-164.
- Emerson, Alfred E. Populations of social insects, symposium paper, **9**: 287-300, 1 fig.
- Termite nests—a study of the phylogeny of behavior, **8**: 247-284, 14 fig.
- Endemic plants, of Bahama Islands (Howard), **20**: 336-337; of Cuba (Carabia), **15**: 321-341.
- Enemies, see Predators.
- Environment, differential effect on parasitic wasp and its host (Payne), **4**: 1-46.
- of marine organisms, biochemical relations (Ketchum), **17**: 309-315.
- relation to respiration of fish (Powers *et al.*), **2**: 385-473.
- role in life of birds (Kendeigh), **4**: 299-417.
- Environmental factors of Sodon Lake—a diathermic lake in southeastern Michigan (Newcombe and Slater), **20**: 207-227, 9 fig.
- Ephestia kühniella* and its parasite, differential effects of environmental factors on (Payne), **4**: 1-46.
- Equilibration, relationship to aggregating behavior in catfish (Bowen), **1**: 1-35.
- Eradication of mesquite, factors affecting action of oils and sodium arsenite (Fisher *et al.*), **16**: 109-126.
- Ericaceae, in bogs of Minnesota (Conway), **19**: 195-196.
- Ernährungsökologischen Beziehungen zwischen *Asio otus* L. und ihren Beutetieren, insbesondere den *Microtus*-arten (Tinbergen), **3**: 443-492, 9 fig.
- Eroded areas, variations in soil and microclimate (Brewer), **17**: 471-500.
- Erosion, control by legumes and grasses (Ward), **19**: 145-171.
- induced by land use in Wisconsin (Marks), **12**: 127.
- of prairies and pastures of central Nebraska (Weaver and Bruner), **18**: 507-549.
- on overgrazed range of Wasatch Plateau (Ellison), **19**: 117-118.
- relation to human ecology (Thorntwaite), **10**: 343-348.
- Errington, Paul L. Some contributions of a fifteen-year local study of the northern bobwhite to a knowledge of population phenomena, **15**: 1-34, 23 fig.
- Establishment of vegetation on depleted subalpine range as influenced by microenvironment (Ellison), **19**: 95-121, 12 fig.
- Estuarine fishes in Louisiana (Gunter), **8**: 313-346.
- Etiolation in white pine seedlings (Smith), **10**: 373-420.
- Eustylochus*, see Oyster "leech."
- Eutamias quadrimaculatus* populations of Sierra Nevada (Storer *et al.*), **14**: 165-192.
- Entettix*, see Leafhopper.
- Evans, Francis C., coauthor, see Storer, Tracy I.
- Evaporation, from forest soils containing charcoal (Tryon), **18**: 81-115.
- in chaparral community (Bauer), **6**: 409-454.
- in prairie and savannah woodland of Oklahoma (Bruner), **1**: 99-188.
- in relation to, growth of longleaf pine seedlings (Pessin), **8**: 115-149.
- vegetation types in Wisconsin (Marks), **12**: 131-132.
- on sands of North Carolina coastal plain, relation to vegetation (Wells and Shunk), **1**: 465-520.
- Evidence on rates of evolution from the distribution of existing and fossil plant species, symposium paper (Stebbins), **17**: 149-158, 4 fig.
- Evolution, convergent and degenerative in termite nesting behavior (Emerson), **8**: 247-284.
- dragonfly-bird relations (Kennedy), **20**: 103-142.
- of behavior (Roberts), **12**: 384-387.
- of certain floristic associations in western North America, symposium paper (Mason), **17**: 201-210.
- of winglessness in Carabidae of mountains and islands (Darlington), **13**: 37-61.
- relation to plant distribution (Just), **17**: 127-137; (Stebbins), **17**: 149-158.
- Experimental studies of interspecies competition. I. Competition between populations of the flour beetles, *Tribolium confusum* Duval and *Tribolium castaneum* Herbst (Park), **18**: 265-307, 14 fig.
- study of the, growth of populations of the "flour beetle" *Tribolium confusum* Duval, as affected by atmospheric moisture (Holdaway), **2**: 261-304, 11 fig.

- [Experimental] [study of]
rhizomes of certain prairie plants (Mueller), **11**: 165-188, 35 fig.
water relations of seedling conifers with special reference to wilting (Marshall), **1**: 37-98, 15 fig.
- Eyestalk chemical as regulator of community activity of crayfish (Roberts), **14**: 359-392.
- Factors, see also Chemical; Physical.
affecting action of oils and water-soluble chemicals in mesquite eradication (Fisher *et al.*), **16**: 109-126, 11 fig.
distribution of sessile Rotatoria (Edmondson), **14**: 31-66.
the vertical distribution of copepods, symposium paper (Clarke), **4**: 530-540, 3 fig.
yearly abundance of passerine birds (Kendeigh and Baldwin), **7**: 91-123.
controlling the early development and survival of eastern white pine (*Pinus strobus* L.) in central New England (Smith), **10**: 373-420, 8 fig.
in the dynamics of rotifer populations, symposium paper (Edmondson), **16**: 357-372, 11 fig.
variation in temporary forest types in Idaho (Larsen), **10**: 1-54.
- Fagus*, see also Beech.
grandifolia in deciduous forest (Braun), **6**: 89-149.
in forests of Allegheny Plateau (Hough and Forbes), **13**: 299-320.
on Black Mountain, Kentucky (Braun), **10**: 193-241.
- Faith in the results of controlled laboratory experiments as applied in nature, symposium paper (Shelford), **4**: 491-498.
- Farm in Michigan, vertebrate fauna (Allen), **8**: 347-436.
- Fate of animals in stream drift when carried into lakes (Dendy), **14**: 333-357, 14 fig.
of typical lake plankton in streams (Chandler), **7**: 445-479, 15 fig.
- Fauna, see Animals.
- Fautin, Reed W. Biotic communities of the northern desert shrub biome in western Utah, **16**: 251-310, 19 fig.
- Features of the Columbia River gorge with special reference to asymmetry in forest trees (Lawrence), **9**: 217-257, 10 fig.
- Fencerows, effect on grassland vegetation (Daubenmire), **12**: 75.
- Fertility of soil, changes in transition from forest to pasture (Stewart), **3**: 107-145.
- Fertilization of soil to increase seed production of native grasses (Cornelius), **20**: 1-29.
- Fescue, see *Festuca*.
- Festuca*, see also Grasses; Grassland; Prairie.
arizonica, relation to reproduction of ponderosa pine (Pearson), **12**: 315-338.
idahoensis (Daubenmire), **12**: 53-79.
- Fichter, Edson. An ecological study of Wyoming spruce-fir forest arthropods with special reference to stratification, **9**: 183-215, 8 fig.
- Fidelity (Cain), **2**: 497.
- Field studies on the effects of airplane applications of DDT on forest invertebrates (Hoffmann *et al.*), **19**: 1-46, 3 fig.
- Fiords, Alaska, vegetation (Cooper), **12**: 1-22.
- Fir, see *Abies*; *Pseudotsuga*.
- Fire, effect on, bog vegetation (Gates), **12**: 243-245.
marshland plants (Penfound and Hathaway), **8**: 1-56.
reproduction of spruce on cut-over land (Korstian), **7**: 125-167.
seed production of native grasses (Cornelius), **20**: 1-29.
vegetation, in Wisconsin (Marks), **12**: 116; of Palouse prairie (Daubenmire), **12**: 60-74; on peat land (Frolik), **11**: 117-140.
relation to, grassland on Guadalcanal (Pendleton), **19**: 75-93.
plant succession on sands of North Carolina coastal plain (Wells and Shunk), **1**: 465-520.
structure of "Big Woods" of Minnesota (Daubenmire), **6**: 233-268.
- Firebrat, see *Thermobia*.
- Fish, see also Animals; *Ameiurus*; *Gambusia*; Haddock.
abundance in Lake Erie, effect of meteorological and limnological factors (Doan), **12**: 292-314.
ecology, especially parasites (Holl), **2**: 83-107.
in lakes (Pearse), **4**: 475-480.
marine and estuarine, in Louisiana (Gunter), **8**: 313-346.
Santa Cruz Island, California (Hewatt), **16**: 185-208.
mass mortality, relation to phytoplankton bloom (Gunter *et al.*), **18**: 309-324.
of Kashmir and Indian Tibet (Hutchinson), **9**: 145-182.
population dynamics in marine area (Clarke), **16**: 321-335.
production and utilization (Ricker), **16**: 373-391.
respiration, relation to environment (Powers *et al.*), **2**: 385-473.
winter-kill in ice-covered lakes (Greenbank), **15**: 343-392.
- Fisher, C. E., Jess L. Fults and Henry Hopp. Factors affecting action of oils and water-soluble chemicals in mesquite eradication, **16**: 109-126, 11 fig.
- Fitzpatrick, T. J., coauthor, see Weaver, J. E.
- Flathead Lake, see Montana.
- Fleas, parasitic on rodents (Storer *et al.*), **14**: 168.
- Flies, see Insects; Chironomidae; Crane flies; Dragonflies; *Drosophila*; *Zelia*.
- Flight, relation to evolution of wingless Carabidae (Darlington), **13**: 37-61.
- Flood tolerance of Douglas fir and ponderosa pine (Lawrence), **9**: 217-257.
- Floodplain of Canadian River, vegetation and insects (Hefley), **7**: 345-402.
of Zion Canyon (Woodbury), **3**: 147-245.
woodlands, Nebraska (Tolstead), **12**: 288-290.
- Flora, see Vegetation.
- Florida, distribution of crane-flies (Rogers), **3**: 1-74.
insect populations of flower heads of *Bidens pilosa* (Needham), **18**: 431-446.
longleaf pine annual rings (Schumacher and Day), **9**: 387-429.
oysters and oyster "leech" (Pearse and Wharton), **8**: 605-655.
west coast, phytoplankton bloom and mass mortality of marine animals (Gunter *et al.*), **18**: 309-324.
- Floristic affinities, of sagebrush and grassland vegetation in Washington and Idaho (Daubenmire), **12**: 76.

[Floristic]

- areas, origin and development, symposium (Just *et al.*), **17**: 123-234.
- composition, use by ecologists (Shantz), **10**: 311-342.
- Floscularia conferta* (Edmondson), **15**: 141-172.
- Flour beetle, see *Tribolium*.
- Flour moth, see *Ephestia*.
- Flower-bee relations (Pearson), **3**: 373-441.
- Flower heads of *Bidens pilosa*, insect population of (Needham), **18**: 431-446.
- Food chains, see Food cycles.
- coactions of the northern plains red fox (Scott), **13**: 427-479, 32 fig.
- cycles in deciduous forest (Williams), **6**: 333-406.
- in marine communities (Dexter), **17**: 270-289.
- in prairie (Carpenter), **10**: 660.
- in Zion Canyon (Woodbury), **3**: 231-237.
- of birds, summer and winter, in elm-maple forest (Twomey), **15**: 202.
- of snail *Busycon* (Magalhaes), **18**: 406.
- on Georges Bank (Clarke), **16**: 328-334; (Whiteley), **18**: 233-264.
- on Kaibab Plateau (Rasmussen), **11**: 261.
- effect on cyclomorphosis of *Daphnia* (Brooks), **16**: 409-447.
- on rotifer populations (Edmondson), **16**: 368-369.
- habits, see also Life histories.
- adaptations in animals of marine sand beaches (Pearse *et al.*), **12**: 154.
- animals (Roberts), **12**: 339-412.
- birds, use of dragonflies (Kennedy), **20**: 103-142.
- black-tailed deer (Cowan), **15**: 109-139.
- crayfish (Roberts), **14**: 359-392.
- fish (Ricker), **16**: 373-391.
- insects in dead logs (Savely), **9**: 321-385.
- Passalus cornutus* (Pearse *et al.*), **6**: 455-490.
- salamanders (Hairston), **19**: 67-69.
- Texas grasshoppers (Isely), **8**: 551-604; **11**: 457-475.
- relation to distribution of Cladocera and Copepoda (Carl), **10**: 55-110.
- to fresh-water plankton populations (Pennak), **16**: 339-355.
- relations of microfauna of Duke Forest (Pearse), **16**: 127-150.
- requirements of *Drosophila* (Chiang and Hodson), **20**: 173-206.
- of rodents (Storer *et al.*), **14**: 165-192.
- Foothills of Rocky Mountains, root habits of plants (Holeh *et al.*), **11**: 327-345.
- Forage, see also Prairie; Grazing.
- types of Colorado and Wyoming (Costello), **14**: 107-134.
- Forbes, R. D., coauthor, see Hough, A. F.
- Forbs, see Prairie.
- Forest(s), see also Vegetation; Communities; Woodland.
- beneficial effects of black locust on associated trees (Chapman), **5**: 37-60.
- communities associated with Louisiana marshlands (Penfound and Hathaway), **8**: 1-56.
- daylight measurements (Park), **1**: 189-230.
- deciduous, see Deciduous.
- edge, see Ecotone.
- effects of airplane application of DDT on invertebrates (Hoffmann *et al.*), **19**: 1-46.
- elm-maple, bird population, aspection, territorialism, coactions (Twomey), **15**: 173-205.
- forage in, in Colorado and Wyoming (Costello), **14**: 107-134.

[Forest(s)]

- insect populations, symposium paper (Graham), **9**: 301-310.
- of Allegheny Plateau (Hough and Forbes), **13**: 299-320.
- of Brazil, annual cycle of plants, mosquitoes, birds and mammals (Davis), **15**: 243-296.
- of northern Wisconsin and upper Michigan (Potzgar), **16**: 211-250.
- of Piedmont, growth and competition (Kozlowski), **19**: 207-231.
- of Pike's Peak region (Whitfield), **3**: 75-105.
- of southwestern Wisconsin (Marks), **12**: 113-133.
- of the Cumberland Mountains (Braun), **12**: 413-447, 36 fig.; see also (Braun), **10**: 193-241.
- of the Illinoian till plain of southwestern Ohio (Braun), **8**: 89-149, 38 fig.
- of Vancouver Island, utilization by deer (Cowan), **15**: 109-139.
- pine and oak, microfauna of litter and soil (Pearse), **16**: 127-150.
- red fir, of Sierra Nevada (Oosting and Billings), **13**: 259-274.
- reproduction and seedling survival in northern Wisconsin (Stoeckeler and Limstrom), **12**: 191-212.
- ponderosa pine, effect of herbaceous vegetation (Pearson), **12**: 315-338.
- soil, see Soil.
- spruce, perpetuation after logging and fire (Korstian), **7**: 125-167.
- spruce-fir, arthropods (Fichter), **9**: 183-215.
- types in northern Idaho, site factor variations and responses (Larsen), **10**: 1-54.
- of New England, original vegetation (Bromley), **5**: 61-89.
- Formica rufa obscuripes*, biology in North Dakota (Weber), **5**: 165-206.
- Formulation, mathematical, of biological productivity (Clarke *et al.*), **16**: 336-337.
- Fort Hays limestone, see Limestone.
- Fort Worth Prairie, see Texas.
- Fossils, distribution in relation to distribution of living plants (Just), **17**: 127-137; (Chaney), **17**: 139-148; (Stebbins), **17**: 149-158.
- Fouling organisms at Beaufort, North Carolina (McDougall), **13**: 321-374.
- Fox, see *Vulpes*.
- Frankenia grandifolia*, ecology and anatomy (Purer), **12**: 107-109.
- Fraxinus pennsylvanica* in prairie climate (Albertson and Weaver), **15**: 393-434.
- Freezing, effect on seed germination in prairie (Blake), **5**: 405-460.
- weather in relation to plant distribution in the Sonoran Desert (Turnage and Hinckley), **8**: 529-550, 4 fig.
- Frequency (Cain), **2**: 478.
- Fresh-water, see Lakes; Rivers; Streams.
- Friday Harbor, see Washington.
- Frogs, see Amphibia.
- Frolik, A. L. Vegetation on the peat lands of Dane County, Wisconsin, **11**: 117-140, 26 fig.
- Frost, see Freezing.
- Fults, Jess L., coauthor, see Fisher, C. E.
- Fumigants, effectiveness in control of *Lasioderma serri-corne* (Powell), **1**: 333-393; correction, **2**: 384.

- Galtsoff, Paul S. The biochemistry of the invertebrates of the sea, symposium paper, **4**: 481-490, 2 fig.
- Gambusia affinis*, reproduction and use in mosquito control (Krumholz), **10**: 1-43.
- Gaspé, see Quebec.
- Gastropoda, see Invertebrates.
- Gates, Frank C. The bogs of northern lower Michigan, **12**: 213-254, 32 fig.
- Genetical sociology (Cain), **2**: 504.
- Geochemistry, oceanic (Hutchinson), **17**: 299-307.
- Geographical distribution of marine organisms, role of temperature zonation (Hutchins), **17**: 325-335.
- Geography, relation to human ecology (Thorntwaite), **10**: 343-348.
- Geology and plant distribution, symposium paper (Just), **17**: 127-137.
- Georges Bank, see Massachusetts.
- Georgia, effect of rainfall and temperature on growth of pine (Coile), **6**: 533-562.
- plethodontid salamanders in Appalachian Mountains (Hairston), **10**: 47-73.
- vegetation of Okefinokee Swamp (Wright and Wright), **2**: 109-232.
- on granitic flat-rocks (McVaugh), **13**: 119-165.
- Germination, see Seed; Seedling.
- Glacial, see Postglacial.
- Glaciers, in Alaska, relation to post-Pleistocene climatic history (Cooper), **12**: 1-22.
- Goniobasis*, see Snails.
- Gopher, see *Thomomys*.
- Gopherus agassizii* (Woodbury and Hardy), **10**: 145-200.
- Graham, Herbert W. Oceanographic consideration of the dinoflagellate genus *Ceratium*, **11**: 99-116, 14 fig.
- Graham, Samuel A. Forest insect populations, symposium paper, **9**: 301-310.
- Grama grass, see *Bouteloua*.
- Granitic flat-rocks, vegetation on, in southeastern United States (McVaugh), **13**: 119-165.
- Grasses, see also Grassland; Pasture; Prairie; Range; Marshes; Bogs; *Agropyron*; *Andropogon*; *Aristida*; *Bouteloua*; *Bromus*; *Buchloe*; *Bulbilis*; *Calamagrostis*; *Festuca*; *Holcus*; *Muhlenbergia*; *Poa*; *Spartina*; *Sporobolus*; *Stipa*.
- height-weight relations in Montana (Heady), **20**: 55-81.
- of Western Cross Timbers in Texas (Dyksterhuis), **10**: 325-376.
- Grasshoppers, see also Insects.
- Acrididae and Tettigoniidae of Texas (Isely), **7**: 317-344; **8**: 551-604; **11**: 457-475.
- Grassland, see also Forage; Grasses; Grazing; Pastures; Prairie.
- alpine, on James Peak, Colorado (Cox), **3**: 299-372.
- biome (Carpenter), **10**: 617-684, 7 fig.
- eroded, southeastern Iowa, effect of legumes and grasses (Ward), **10**: 145-171.
- in Black Forest region, Colorado (Livingston), **10**: 123-144.
- in Medicine Bow Mountains, associated animals (Blake), **15**: 225-227, 234-236.
- of Guadalcanal, effect of rain shadow (Pendleton), **10**: 75-93.
- of Kaibab Plateau (Rasmussen), **11**: 229-275.
- Gravity, relation to sessile marine invertebrates (McDougall), **13**: 321-374.
- Grazing, effect on, forest vegetation in Wisconsin (Marks), **12**: 124-127.
- prairie (Albertson and Weaver), **12**: 23-51; **14**: [Grazing] [effect on] 1-29; (Dyksterhuis), **16**: 1-29; (Weaver and Bruner), **10**: 507-549.
- sand-hill vegetation in Nebraska (Tolstead), **12**: 273-281, 285-288.
- Sudan grass (de Peralta), **5**: 355-404.
- vegetation, of Hawaii (Egler), **17**: 398-399; of Palouse prairie (Daubenmire), **12**: 62, 68; of peat land (Frolik), **11**: 117-140; of southern New England (Bromley), **5**: 61-89; of Wasatch Plateau (Ellison), **19**: 95-121.
- Western Cross Timbers of Texas (Dyksterhuis), **10**: 325-376.
- woodlands in northeastern Ohio (Dambach), **14**: 255-270.
- relation to ponderosa pine reproduction (Pearson), **12**: 315-338.
- Greasewood association in Colorado and Wyoming (Costello), **14**: 130-131.
- Great Basin, biotic communities (Fautin), **10**: 251-310.
- Greater Antilles, evolution in Carabidae (Darlington), **13**: 37-61.
- Greenbank, John. Limnological conditions in ice-covered lakes, especially as related to winter-kill of fish, **15**: 343-392, 34 fig.
- Ground squirrel, see *Citellus*.
- Growth, see also Life histories.
- and development of the root systems of juvenile lodgepole pine (Preston), **12**: 449-468, 16 fig.
- aspen in Minnesota and Wisconsin (Kittredge), **8**: 151-246.
- fish, relation to populations (Ricker), **16**: 373-391.
- longleaf pine seedlings (Pessin), **8**: 115-149.
- oyster (Mattox), **10**: 350-352.
- pine, effect of rainfall and temperature (Coile), **6**: 533-562.
- planktonic Crustacea on Georges Bank (Whiteley), **10**: 233-264.
- populations of *Tribolium confusum* (Holdaway), **2**: 261-304.
- rings, see Annual growth.
- trees, effect of *Robinia pseudoacacia* in vicinity (Chapman), **5**: 37-60.
- in prairie climate (Albertson and Weaver), **15**: 393-434.
- relation to light and water (Kozlowski), **10**: 207-231.
- Guadalcanal, rain shadow effects on vegetation (Pendleton), **10**: 75-93.
- Guam, *Ascoschöngastia indica* (Wharton), **16**: 151-184.
- rodent populations (Baker), **16**: 393-408.
- Gulf of Mexico, dragonflies of coastal marshes (Wright), **13**: 481-497.
- phytoplankton bloom and mass mortality of marine animals (Gunter *et al.*), **10**: 309-324.
- seasonal variation in abundance of estuarine and marine fishes (Gunter), **8**: 313-346.
- Gum, sweet, in deciduous forest (Braun), **6**: 89-149.
- Gunter, Gordon. Seasonal variations in abundance of certain estuarine and marine fishes in Louisiana, with particular reference to life histories, **8**: 313-346, 16 fig.
- Robert H. Williams, Charles C. Davis and F. G. Walton Smith. Catastrophic mass mortality of marine animals and coincident phytoplankton bloom on the west coast of Florida, November 1946 to August 1947, **10**: 309-324, 2 fig.
- Gymnodinium brevis*, relation to mass mortality of marine animals (Gunter *et al.*), **10**: 309-324.

- Habit, see Behavior; Food habits.
 Habitat, see also Life histories.
 factors of Carrizo sands, Texas (McBryde), **3**: 247-297.
 of North Carolina coastal plain sands (Wells and Shunk), **1**: 465-520.
 of aspen community of Minnesota and Wisconsin (Kitredge), **8**: 151-246.
 Habitats and composition of the vegetation of Okefinokee Swamp, Georgia (Wright and Wright), **2**: 109-232, 75 fig.
 Hackberry, see *Celtis*.
 Haddock population, role of intraspecific competition (Herrington), **17**: 317-323.
 Hairston, Nelson G. The local distribution and ecology of the plethodontid salamanders of the southern Appalachians, **19**: 47-73, 25 fig.
 Halophytes of California coast marshes (Purer), **12**: 81-111.
 Hanson, Herbert C. and Warren Whitman. Characteristics of major grassland types in western North Dakota, **8**: 57-114, 12 fig.
 Hardwood, see Deciduous; Forest.
 Hardy, Ross. The influence of types of soil upon the local distribution of some mammals in southwestern Utah, **15**: 71-108, 19 fig.
 coauthor, see Woodbury, Angus M.
 Harkema, Reinard. The parasites of some North Carolina rodents, **6**: 151-232, 5 fig.
 Harries, F. H. and J. R. Douglass. Bionomic studies on the beet leafhopper, **18**: 45-79, 18 fig.
 Harris, Benjamin B. and J. K. Gwynn Silvey. Limnological investigation on Texas reservoir lakes, **10**: 111-143, 6 fig.
 Hatchett, Stephen P. Biology of the Isopoda of Michigan, **17**: 47-79, 43 fig.
 Hathaway, Edward S., coauthor, see Penfound, William T.
 Hawaii, arid southeast Oahu vegetation (Egler), **17**: 383-435.
 Hayward, C. Lynn. Biotic communities of the Wasatch chaparral, Utah, **18**: 473-506, 6 fig.
 Heady, Harold F. Studies on bluebunch wheatgrass in Montana and height-weight relationships of certain range grasses, **20**: 55-81, 26 fig.
 Hearing, relationship to aggregating behavior in catfish (Bowen), **1**: 1-35.
 Heart rate, variations in birds (Odum), **11**: 299-326.
 Heat, see Temperature; Physical factors.
 Heath community in Alaska (Cooper), **12**: 1-22.
 Hefley, Harold M. Ecological studies on the Canadian River floodplain in Cleveland County, Oklahoma, **7**: 345-402, 33 fig.
 Height-weight relationships of grasses in Montana (Heady), **20**: 55-81.
 Helminth parasites in fish and amphibians (Holl), **2**: 83-107.
 Hemlock, see *Tsuga*.
 Hemoglobin in respiration of fish (Powers *et al.*), **2**: 385-473.
 Herbaceous vegetation a factor in natural regeneration of ponderosa pine in the Southwest (Pearson), **12**: 315-338, 12 fig.
 Herrington, William C. The role of intraspecific competition and other factors in determining the population level of a major marine species, symposium paper, **17**: 317-323, 5 fig.
 Hertel, E. W., coauthor, see Holch, A. E.
 Hewatt, Willis G. Marine ecological studies on Santa Cruz Island, California, **16**: 185-208, 2 fig.
 Hibernation of, Chironomidae (Berg), **20**: 83-101.
 desert tortoise (Woodbury and Hardy), **18**: 145-200.
 insects, in cattle droppings (Mohr), **13**: 275-298.
 role of water (Hodson), **7**: 271-315.
 slider turtle (Cagle), **20**: 31-54.
 Hickman, Thressa A., coauthor, see Powers, Edwin B.
 Hickory-oak, see Oak-hickory.
 Hicks, Ellis A. Ecological factors affecting the activity of the western fox squirrel, *Sciurus niger rufiventer* (Geoffroy), **19**: 287-302, 4 fig.
 Hinckley, Arthur L., coauthor, see Turnage, William V.
 History, life, see Life Histories.
 of population ecology (Park), **16**: 313-320.
 of the native vegetation of western Kansas during seven years of continuous drought (Albertson and Weaver), **12**: 23-51, 34 fig.
 post-glacial, see Post-glacial.
 post-Pleistocene climatic in Alaska (Cooper), **12**: 18-20.
 range and home life of the northern bison (Soper), **11**: 347-412, 19 fig.
 Hodson, A. C. Some aspects of the role of water in insect hibernation, **7**: 271-315, 8 fig.
 coauthor, see Chiang, H. C.
 Hoffmann, C. H., H. K. Townes, H. H. Swift and R. I. Sailer. Field studies on the effects of airplane applications of DDT on forest invertebrates, **19**: 1-46, 3 fig.
 Holch, A. E., E. W. Hertel, W. O. Oakes and H. H. Whitwell. Root habits of certain plants of the foothills and alpine belts of Rocky Mountain National Park, **11**: 327-345, 12 fig.
Holcus sorghum sudanensis, illustrating principles of competition (de Peralta), **5**: 355-404.
 Holdaway, F. G. An experimental study of the growth of populations of the "flour beetle" *Tribolium confusum* Duval, as affected by atmospheric moisture, **2**: 261-304, 11 fig.
 Holl, Fred J. The ecology of certain fishes and amphibians with special reference to their helminth and linguatulid parasites, **2**: 83-107, 10 fig.
 Holland, see Netherlands.
 Hollingshead, A. B. Human ecology and human society, symposium paper, **10**: 354-366.
 Home range, see Life histories; Populations.
 Hopkins, Florian G., coauthor, see Powers, Edwin B.
 Hopp, Henry, coauthor, see Fisher, C. F.
 Hormones, relation to activity of crayfish (Roberts), **14**: 359-392.
 Hosts, see also Parasites.
 of beet leafhopper (Harries and Douglass), **18**: 45-79.
 Host-parasite balance, differential effect of environmental factors on (Payne), **4**: 1-46.
 relations, in beetle, *Passalus cornutus* (Pearse *et al.*), **6**: 455-490; in frogs and toads (Brandt), **6**: 491-532; in North Carolina rodents (Harkema), **8**: 151-232.
 -predator relations, see Predators.
 Hough, A. F. and R. D. Forbes. The ecology and silvics of forests in the High Plateaus of Pennsylvania, **13**: 299-320, 20 fig.
 House wren, see Wren.
 Howard, Richard A. Vegetation of the Bimini island group, Bahamas, British West Indies, **20**: 317-349, 28 fig.
 Hudson Bay, see Manitoba; Quebec.

- Human ecology and human society, symposium paper (Hollingshead), **10**: 354-366.
welfare, relation to ecology, symposium (Shantz *et al.*), **10**: 307-372.
- Humidity, see also Water relations; Weather.
differential effects on parasitic wasp and its host (Payne), **4**: 1-46.
effect on, ant activity (Weber), **5**: 165-206.
life cycle of *Lasioderma serricorne* (Powell), **1**: 333-393; correction **2**: 384.
Tribolium confusum (Holdaway), **2**: 261-304.
role in life of birds (Kendeigh), **4**: 299-417.
- Humm, H. J. Plants of Beaufort sand beaches, **12**: 164-174, 1 fig.
coauthor, see Pearse, A. S.
- Hungarian partridge (*Perdix perdix* Linn.) in the Palouse region, Washington (Yocum), **13**: 167-201, 17 fig.
- Hunger, relation to activity of crayfish (Roberts), **14**: 359-392.
- Hutchins, Louis W. The bases for temperature zonation in geographical distribution, symposium paper, **17**: 325-335, 8 fig.
- Hutchinson, G. Evelyn. Ecological observations on the fishes of Kashmir and Indian Tibet, **9**: 145-182, 8 fig.
- Limnological studies in Connecticut. IV. The mechanisms of intermediary metabolism in stratified lakes, **11**: 21-60, 34 fig.
- The problems of oceanic geochemistry, symposium paper, **17**: 299-307, 3 fig.
- Hyacinth, water, see *Piaropus*.
- Hydrogen-ion concentration, see also Chemical factors.
of bogs in central Minnesota (Conway), **19**: 173-206.
of fish blood (Powers *et al.*), **2**: 385-473.
- Hydrophytes, see Aquatic plants.
- Ice cover, relation to distribution of Cladocera and Copepoda (Carl), **10**: 55-110.
relation to limnology, especially fish winter-kill (Greenbank), **15**: 343-392.
storms, effect on trees (Lawrence), **9**: 217-257.
- Idaho, beet leafhopper, life history and populations (Harries and Douglass), **18**: 45-79.
effect of site factors on temporary forest types (Larsen), **10**: 1-54.
mountain climates (Baker), **14**: 223-254.
Snake River plains, primary succession on volcanic deposits (Eggler), **11**: 277-298.
vegetation of Palouse prairie (Daubenmire), **12**: 53-79.
- Iguanid, see *Uma*.
- Illinoian till plain forests of Ohio (Braun), **6**: 89-149.
- Illinois, bird population of elm-maple forest (Twomey), **15**: 173-205.
cattle droppings as ecological units (Mohr), **13**: 275-298.
Chicago region, daylight measurements (Park), **1**: 189-230.
ecological relations of bees (Pearson), **3**: 373-441.
cryptozoa of woodland (Cole), **16**: 49-86.
effect of seasonal variability on invertebrates of deciduous forest (Davidson), **2**: 305-333.
oak-hickory association, biotic communities (Dirks-Edmunds), **17**: 235-260.
slider turtle (Cagle), **20**: 31-54.
western mosquitofish, reproduction and use in mosquito control (Krumholz), **18**: 1-43.

Illustrations

- Alaska, Prince William Sound, glaciers and vegetation, 10 fig., **12**: 5-15.
- Alberta and Saskatchewan, prairie vegetation, 29 fig., **20**: 276-311.
- Anniella pulchra*, limbless lizard, tracks and habitats, 10 fig., **14**: 274-287.
- Arizona, vegetation of Kaibab Plateau, relation to utilization by animals, 8 fig., **11**: 243-266.
- Ascoschöngastia indica*, chigger, life cycle and anatomy, **16**: 155-163, 172.
- Aster pilosus*, effect of organic matter in soil, **20**: 242.
- Bahamas, vegetation of Bimini Islands, 25 fig., **20**: 321-330.
- birds, feeding activity on Michigan farm, **8**: 408, 409, 416, 419.
- Bison, habitats and "signs," 19 fig., **11**: 349-390.
- Brazil, forest, 11 fig., **15**: 247-260.
- British Columbia, Vancouver Island, vegetation and deer damage, **15**: 114-124, 134-136.
- Busycon* spp., marine snails, shells, **18**: 383-389, 396-403.
- California, chaparral vegetation, **6**: 418-423.
red fir forest, **13**: 267, 270.
salt marsh vegetation, 4 fig., **12**: 84, 86.
sand dune plants, growth forms and anatomy, **6**: 66-87.
- Chironomid larvae and pupae, characters of five species, **20**: 100, 101.
- Cladocera, **9**: 579.
- Colorado, alpine vegetation, 10 fig., **3**: 303-353.
Black Forest region, vegetation and soils, 16 fig., **19**: 130-141.
grassland, effect of drought, and recovery, 15 fig., **14**: 449-473.
Great Plains, vegetation, **14**: 111-131.
prairie woodlands, effect of drought on trees, **15**: 402, 425.
reservoir lakes, 7 fig., **19**: 235, 236.
Pike's Peak region, vegetation, **3**: 82, 85, 87; effect of habitat on leaf anatomy, **3**: 96, 97.
sand-hills, vegetation, **9**: 8-11.
- Connecticut, old-growth forest, **5**: 81, 83, 85.
tidal-marshes, **20**: 161, 168, 169.
- Copepod cysts, **9**: 580.
- Cuba, cloud forest on Pico Turquino, **13**: 50, 51.
plants and vegetation, 56 fig., **13**: 377-426.
vegetation of Sierra de Nipe, **15**: 323-339.
- Daphnia galeata* and *D. retrocurva*, Cladocera, effect of temperature on head length, **16**: 416-443.
- Datura meteloides*, Jimson weed, **3**: 226.
- diagrams, alpine plant succession in Colorado, **3**: 356.
animals living among sand grains of lake beach, **10**: 540.
annual population cycles of plankton in Colorado reservoir lakes, **10**: 250-262.
bog cross-section, **12**: 225.
bog succession, **12**: 244.
distribution of aquatic vegetation on lake shore, **5**: 138.
effect of drainage and burning on plant succession in peat lands, **11**: 127, 133.
food chains, in grassland biome, **10**: 660; of Buaycon, **18**: 406; on Kaibab Plateau, **11**: 261.
food coactions of tidal inlet, **17**: 272, 278, 284, 287, 288.
food cycles, in marine area, **16**: 330; in Zion Can-

[Illustrations] [diagrams]

- yon, **3**: 232; of birds, winter and summer, **15**: 202.
- food habits, of Hungarian partridge, **13**: 193; of mule deer, **11**: 264.
- food relations of animals in pine logs, **9**: 335.
- forest litter and soil with characteristic animal inhabitants, **16**: 132.
- prairie, effect of grazing on principal grass species, **16**: 15.
- home ranges, of raccoon, **13**: 226-231; of red fox, **13**: 443, 445.
- host-parasite interaction, **9**: 317.
- light transmission through snow, ice and water, **15**: 369-373.
- mechanisms involved in animal behavior, **12**: 341-349.
- plankton, nutritional interrelationships, **16**: 342.
- seasonal distribution of salamander parasites in North Carolina, **7**: 212-216.
- speculation of five common sponges, **17**: 38.
- stages in tidal-marsh formation, **20**: 149.
- succession in deciduous forest, southwestern Ohio, **6**: 100, 101; in Louisiana marshlands, **8**: 33; in southern Appalachian Mountains, **11**: 94; in Zion Canyon, **3**: 221, 223; of communities of eroding and depositing shores, **4**: 550; on South Canadian River floodplain, Oklahoma, **7**: 348, 350; on tundra near Churchill, **13**: 18.
- successional relations of Colorado sand-hill vegetation, **9**: 29-32.
- termites, environmental complex, **9**: 288.
- vegetative characteristics of tidal-marsh grasses, **20**: 153.
- diatoms in food of oysters, **17**: 340-345.
- of Lake Washington, **9**: 136-138.
- Fagus grandifolia*, beech, **13**: 313.
- Florida, fish killed at time of plankton bloom, **18**: 313.
- northern, crane fly habitats, and vegetation, **20** fig., **3**: 72-74.
- Formica rufa obscuripes*, thatching ant, **5**: 170; nests, 182-185.
- Gambusia affinis*, mosquitofish, **18**: 4, 14.
- Georgia, granitic flat-rocks, exposures and vegetation, 21 fig., **13**: 123-161.
- Okefinokee Swamp, vegetation, 72 fig., **2**: 122-225.
- Gopherus agassizii*, desert tortoise, habitats, dens, anatomy and home ranges, 25 fig., **18**: 145-182.
- grasshoppers, **8**: 594; **11**: 461-466.
- Guadalcanal, vegetation, 4 fig., **19**: 78, 86-90.
- Guam, vegetation, **16**: 174-177, 397; nests of *Rattus mindanensis*, **16**: 176-179.
- Hawaii, vegetation of arid southeast Oahu, 27 fig., **17**: 398-431.
- Idaho, habitats and vegetation on volcanic deposits, 16 fig., **11**: 280-293.
- northern, effect of site factors on secondary forest succession, **10**: 12, 14, 42, 47.
- instruments, bottom sampler, **9**: 578; **14**: 337.
- collecting, insects, **19**: 4, 9; soil cores, **19**: 153.
- culture of *Spirodela polyrrhiza*, **17**: 444-445.
- extracting plant cell sap, **5**: 8.
- gradient tank for fish, **1**: 6.
- measuring, infiltration rate of soil, **9**: 436; moisture given off by bird lungs, **4**: 320; rainfall interception by plants, **10**: 248, 250.
- net for capturing slow-moving marine bottom organisms, **5**: 257.

[Illustrations] [instruments]

- photometer for use under ice, **15**: 353, 354.
- phytometers, **5**: 361; **19**: 219; standardization and use, **3**: 100-103.
- point-transect method, **20**: 279.
- recording vibrations, **11**: 320-321.
- studying, activity of crayfish, **14**: 386-390; marshland, **8**: 11; rodent populations, **14**: 172.
- suspending containers near lake bottoms, **1**: 290.
- testing, effect of environment on insects, 4 fig., **1**: 339-345; effects of gravity, current and light on marine animals, **13**: 328, 329, 351; tolerance of insects for humidity and temperature, **3**: 406.
- trail-laying device for turtles, **20**: 355.
- turtle basking trap, **20**: 35.
- Iowa, see Illustrations, prairie.
- Kansas, see Illustrations, prairie.
- Kentucky, vegetation, of Black Mountain, 11 fig., **10**: 198-233; of Cumberland Mountains, 22 fig., **12**: 418-446.
- legumes, response to different environments, **17**: 489, 496-499.
- Leptilon canadense*, horseweed, effect of organic matter in soil, **20**: 241.
- Louisiana, marsh vegetation, **8**: 16-18, 24, 28-31.
- Manitoba, Churchill region, biotic habitats, **13**: 4-17.
- maps, Alaska, Prince William Sound region, **12**: 3, 12, 14.
- Arizona, distribution of mule deer and Kaibab squirrel on Kaibab Plateau, **11**: 246, 256; vegetation of Kaibab Plateau, **11**: 233.
- Bahamas, Bimini Island vegetation, **20**: 320.
- British Columbia, distribution of Cladocera and Copepoda, **10**: 79-84.
- California, Yosemite Park region, winter range of mule deer, **2**: 44.
- distribution of typical plant species characteristic of granitic flat-rocks of southeastern United States, **13**: 138-142.
- Florida, northern, vegetation, **3**: 69.
- Georges Bank, distribution of Crustacea, **18**: 245-259.
- Georgia, Okefinokee Swamp, **2**: 113, 229.
- Idaho, vegetation zones and precipitation in Palouse region, **12**: 56, 57.
- Indiana, Illinoian and Wisconsin drift, **6**: 91; Tippecanoe River system, lakes, moraines and distribution of snails, **2**: 252-259.
- Louisiana, Mississippi River delta, **13**: 483; vegetation, **8**: 7.
- Manitoba, Churchill region, vegetation, **13**: 3.
- Michigan, distribution of Isopoda, **17**: 52-60.
- Minnesota, vegetation, **5**: 236.
- New England, southern, forests, **5**: 70, 77.
- North America, grassland biome, **10**: 665; ranges of plants characteristic of Colorado sand-hills, **9**: 38-43.
- North America, eastern, breeding and wintering ranges of house wren, **4**: 303; major ecological communities, **4**: 304.
- oceans, distribution of *Ceratium* spp., **11**: 102-104.
- Ohio, Illinoian and Wisconsin drift, **6**: 91.
- Oklahoma, vegetational regions, **1**: 108.
- Sonoran Desert, minimum temperatures in 1913 and 1937, **8**: 533, 535.
- Texas, distribution of grasshoppers, **7**: 339; Fort Worth Prairie, **16**: 3; Western Cross Timbers, **18**: 329.

[Illustrations] [maps]

- Tobago, British West Indies, geology, **14**: 138; distribution of forests, **14**: 140.
- United States, distribution of Hungarian partridge, **13**: 180; of mosquitoes, nine species, **16**: 35-43; of slider turtle subspecies, **20**: 34.
- United States, western, climate of mountain areas, **14**: 226; distribution of plant species characteristic of Palouse grassland, 4 maps, **12**: 77, 78.
- Utah, Daggett County, vegetation and streams, **2**: 73.
- Washington, communities of sea bottom near San Juan Islands, **5**: 260, 261; distribution of Hungarian partridge, **13**: 181; southeastern, vegetation and precipitation, **12**: 56, 57.
- Wisconsin, distribution of Atlantic coastal plain plants in sand barrens, 20 maps, **2**: 339-376; distribution of prairie plants, **10**: 712-716; glacial Great Lakes, 4 maps, **2**: 356-358; Highland Lake District, **4**: 441.
- World, range of *Gambusia affinis*, native and introduced, **10**: 36.
- Wyoming, Yellowstone Park region, winter range of mule deer, **2**: 42.
- Massachusetts, marine communities of tidal inlet at Cape Ann, 9 fig., **17**: 276-287.
- Michigan, bog vegetation, 29 fig., **12**: 220-243.
- food plants and feeding activity of mammals and birds, **8**: 402-409, 416-420.
- vertebrate habitats on farm, **8**: 353-359, 365.
- Minnesota, "Big Woods" in winter, **6**: 248.
- zonation of vegetation at bog margins, 5 fig., **19**: 178-198.
- see also Illustrations, prairie.
- Missouri, see Illustrations, prairie.
- Montana, grassland, effect of overgrazing, soil profiles, 10 fig., **20**: 59-66.
- Myrmecocystus mexicanus*, honey ant, nest, **16**: 299.
- Nebraska, see also Illustrations, prairie.
- vegetation of loess bluffs, 41 fig., **10**: 510-543; effect of erosion, 4 fig., **18**: 516, 517.
- vegetation of sand-hills in Cherry County, 20 fig., **12**: 258-290.
- New Hampshire, aerial view of Pinkham Notch and Mount Washington, **13**: 46.
- North Carolina, animals of sand beaches, anatomy and burrowing habits, sketches or photographs of 25 animals, **12**: 149-163.
- vegetation of coastal plain sands, 21 fig., **1**: 470-518; root distribution, **1**: 472, 476, 480; leaf anatomy, **1**: 475-481.
- vegetation of Roan Mountain, 19 fig., **11**: 62-94.
- North Dakota, grasslands, **8**: 59, 65-79, 84, 88.
- Nyroca americana*, redhead duck, nests and nesting sites, **15**: 52-58.
- Ohio, forest vegetation, 34 fig., **6**: 106-144.
- grazed and ungrazed woodland, **14**: 257-261.
- Oklahoma, pasture invaded by Russian thistles, **14**: 457.
- successional stages of vegetation on Canadian River floodplain, 20 fig., **7**: 354-383.
- vegetation, 23 fig., **1**: 132-184.
- opossum, **13**: 244-245.
- Opuntia tenuispina*, elephant-ear cactus, **3**: 210.
- Oregon, storm-pruned and wind-trained trees of Columbia Gorge, **8**: 243, 245.
- oyster, *Ostrea rhizophorae*, attached to mangrove roots, **19**: 348, 349; shell, 354; spat, 352.

[Illustrations] [oyster]

- Ostrea* sp., effect of invasion by oyster "leech," **8**: 633.
- Ostrea virginica*, setting process, **4**: 54, 57, 61; spat, 50 51; larval anatomy, 56; vertical distribution in relation to tide, 100, 101.
- Passalus cornutus*, beetle, **6**: 458; parasites and commensals of **6**: 469-483.
- Pennsylvania, white pine-hemlock forest, **13**: 310.
- pheasant nests, **17**: 11-18.
- Piaropus crassipes*, water hyacinth, mats and anatomy, **18**: 449-454, 462-468.
- Picea rubra*, red spruce, in Appalachian Mountains, 16 fig., **7**: 128-163.
- Pinus banksiana* and *P. resinosa*, Jack and Norway pines, root development after field planting, **12**: 203-205.
- contorta latifolia*, lodgepole, root systems of young trees, **12**: 458; root tips with mycorrhizal sheath, **12**: 461, 463.
- echinata*, shortleaf, stands of various ages, **8**: 445-448, 467; root systems of seedlings, 488.
- palustris*, longleaf, seedlings, **8**: 119; root systems, 144.
- ponderosa*, effect of grasses on regeneration, **12**: 319-336.
- resinosa*, see *P. banksiana*.
- strobis*, white, perched on root mass of old wind-thrown tree, **13**: 310; reproduction near stand margin, **10**: 377; seedlings grown under different conditions, **10**: 382, 383.
- taeda*, loblolly, seedlings, effect of light and moisture on growth of shoots and roots, **19**: 216-219.
- prairie, **1**: 175, 176; 35 fig., **4**: 110-286; 5 fig., **7**: 484-493; 6 fig., **8**: 65-84; 5 fig., **16**: 7-24; 14 fig., **20**: 276-311.
- effect of drought, 15 fig., **9**: 437-475; 18 fig., **12**: 30-48; **13**: 66-92, 96, 102, 110, 111; 16 fig., **14**: 3-21; 95 fig., **14**: 398-475; 20 fig., **16**: 452-461; 14 fig., **20**: 253-266.
- grasses and forbs, 6 fig., **1**: 160-184; 75 fig., **4**: 125-266; **7**: 542; 6 fig., **11**: 170-181; 12 fig., **12**: 271-288; 25 spp., **14**: 400-475; 5 spp., **15**: 300-315; **18**: 353; 7 fig., **18**: 520-534; **20**: 72; coverage of tops compared with occupancy at soil level, **19**: 162, 163; effect of clipping, **20**: 73, 74; effect of nitrogenous fertilizer, **20**: 19; effect of spacing, **20**: 24; recovery of dust-covered *Bouteloua gracilis* by vertical rhizomes, **9**: 466; rhizomes, 28 fig., **11**: 172-185; roots, **4**: 123; 30 spp., **12**: 272-287, 318; **13**: 98-104; **14**: 462; **18**: 518, 519; **19**: 163, 164; 9 spp., **19**: 308-335; **20**: 67-69; roots and tops, **7**: 518-524, 531-534, 539; seedling development, 17 spp., **5**: 411, 442-446.
- rainfall interception by plants, **10**: 264, 270-272.
- shrubs, **1**: 182, 183; **4**: 198, 212, 226, 251; *Artemisia tridentata*, recovery after fire, **12**: 62.
- successional stages to climax, **15**: 300, 316-318.
- weeds, **14**: 462.
- woodland, effect of drought on trees, 58 fig., **15**: 395-426; rabbit injury to honey locust, **15**: 411.
- Prosopis juliflora*, mesquite, growth forms, **16**: 111-118, stem and root anatomy, **16**: 115-120.
- Prunus serotina*, black cherry, **13**: 315.
- Pseudemys scripta troostii*, slider turtle, courtship,

[Illustrations]

- eggs, nests and young turtles, 12 fig., **20**: 36-50.
- Pseudotsuga taxifolia*, Douglas fir, **9**: 237; storm-pruned and wind-trained trees, 243.
- Quebec, topography, rock surfaces and vegetation of Hudson Bay region, 22 fig., **18**: 121-132, 140, 141.
- Quercus catesbaei*, turkey oak, vertical orientation of leaves of juvenile plants, **1**: 473, 474; leaf anatomy, 475.
- lyrata*, overcup oak, seedlings, effect of light on growth, **19**: 219.
- mohriana*, shin oak, **1**: 155.
- raccoons, tracks, habitats and dens, 30 fig., **13**: 205-241, 252.
- red fox and "signs," 12 fig., **13**: 434-453.
- Robinia pseudoacacia*, black locust, plantations, beneficial effect on adjacent Catalpa plantations, **5**: 43, 44.
- roots, see also Illustrations, prairie grasses and forbs oak and pine seedlings from three soil types, **11**: 153, 155.
- Rocky Mountain plants, **11**: 333-341.
- shortleaf pine and associated species, **8**: 488-492.
- thirty Nebraska sand-hills plants, **12**: 272-287.
- Rotatoria, six species, **14**: 36; tube building, **15**: 149.
- salt marsh plants, growth habit, and anatomy of leaf, stem and root, **12**: 97-110.
- Saskatchewan and Alberta, prairie vegetation, 29 fig., **20**: 276-311.
- snakes, kingsnake eating rattlesnake, **3**: 196.
- South Dakota, see Illustrations, prairie.
- Spilogale interrupta*, prairie spotted skunk, habitats and dens, 18 fig., **18**: 204-223.
- Spirodela polyrhiza*, greater duckweed, with turions, 17 fig., **17**: 452-456.
- sponges of Wisconsin lakes, distribution in relation to chemical and physical factors of water, **5**: 473; details of anatomy, 25 fig., **5**: 502-504.
- Storeria dekayi*, brown snake, habitat and den, **6**: 275.
- Stylochus inimicus*, oyster leech, anatomy and embryology, **8**: 610-615; response of oyster to, 633.
- Sudan grass, development of tops and roots, **5**: 364-369; effect of competition, 374, 382, 386; root and leaf anatomy, 379, 380.
- sunflower, effect of competition with Sudan grass, **5**: 383.
- Syphacia peromysci*, new menatode parasite of *Peromyscus l. leucopus*, **6**: 219.
- Tennessee, forest of Cumberland Mountains, **12**: 439.
- reforestation of abandoned fields, 19 fig., **16**: 90-103.
- termite nests, **8**: 258-277.
- Texas, grasshopper habitats, **7**: 325-327.
- vegetation of Fort Worth Prairie, 6 fig., **16**: 7-24.
- vegetation on Carrizo sands, 19 fig., **3**: 249-293.
- Western Cross Timbers region, vegetation, soil and effects of erosion, 33 fig., **18**: 335-373.
- Tibet, Indian, streams and a lake, **9**: 156, 159-161, 169.
- Tobago, British West Indies, vegetation, **14**: 142-147.
- Typha latifolia*, cattail, stature at water and forest margins of bog sedge-mat, **19**: 198, 199.
- Uma inornata*, sand lizard, anatomy, tracks and sand dune habitats, **14**: 313-322.
- Utah, chaparral, 6 fig., **17**: 476.

[Illustrations] [Utah]

- Uinta Mountain region, mammals, 4 fig., **2**: 75-81; vegetation, 10 fig., **2**: 74-81.
- vegetation and soil types, **15**: 80-91, 104.
- vegetation of depleted range on Wasatch Plateau, 8 fig., **19**: 99-118; of northern desert shrub biome, 10 fig., **16**: 263-281.
- Zion Canyon and vegetation, 19 fig., **3**: 149-239.
- Utricularia vulgaris*, bladderwort, with rotifers, **15**: 144.
- vegetation of the earth, forest, grassland, desert and aquatic, 25 fig., **10**: 330-342.
- Virginia, forest of Cumberland Mountains, **12**: 433.
- Washington, habitats of Hungarian partridge, 8 fig., **13**: 171-192; nest, 188.
- vegetation of grassland, 10 fig., **12**: 58-70.
- West Virginia, spruce forest, **7**: 129; effect of cutting, 5 fig., 136-163; cutting and fire, 149; natural reproduction of spruce, 5 fig., 141-162; partial or complete replacement of spruce by hardwoods, 4 fig., 151-162.
- Wisconsin, fifty year old pine forest on sandy soil, **12**: 209.
- Lake Forest stands of pines and hardwoods, **16**: 235, 236.
- lake shores, **5**: 226, 230, 237; **10**: 545-547.
- peat land vegetation, 22 fig., **11**: 123-138.
- relic prairie, 11 fig., **10**: 694-710.
- vegetation, grazed and ungrazed, forest, 6 fig., **12**: 118-128; marsh meadow, 127.
- Wyoming, habitats in Medicine Bow Mountains, 5 fig., **15**: 215-231.
- spruce-fir forest, **9**: 189-193.
- vegetation of Great Plains, **14**: 115-130.
- Important species of the major forage types in Colorado and Wyoming (Costello), **14**: 107-134, 20 fig.
- Indian Tibet, see Tibet.
- Indiana, effect of *Robinia pseudoacacia* on growth of associated trees (Chapman), **5**: 37-60.
- snails of Tippecanoe River system (Wright), **2**: 233-259.
- Indicators of insect population changes (King), **9**: 277-278.
- of Lake Forest formation (Potzger), **16**: 211-250.
- of rate and extent of succession or retrogression of rangeland in Texas (Dyksterhuis), **16**: 1-29.
- plant, in aspen community of Minnesota and Wisconsin (Kittredge), **9**: 151-246.
- in mixed mesophytic forest (Braun), **10**: 193-241.
- in relation to land use in Wisconsin (Marks), **12**: 132.
- protozoan, of pollution (Lackey), **8**: 501-527.
- Infiltration, in grassland (Weaver), **20**: 251-270.
- into prairie soil during drought (Weaver and Albertson), **13**: 63-117.
- rates of soils in prairie (Robertson), **9**: 431-491.
- Influence of, climatic and weather factors upon the numbers of birds on a depositing creek bank (Shaver), **3**: 535-597, 25 fig.
- precipitation upon the width of annual rings of certain timber trees (Schumacher and Day), **9**: 387-429, 16 fig.
- types of soil upon the local distribution of some mammals in southwestern Utah (Hardy), **15**: 71-108, 19 fig.
- Injury and death or recovery of trees in prairie climate (Albertson and Weaver), **15**: 393-434, 62 fig.
- Insect(s), see Invertebrates; Bees; Beetles; Fleas;

[Insects]

- Flies; Grasshoppers; Leafhoppers; Mosquitoes; Moths; Wasps; *Thermobia*.
associated with thatching ant colonies in North Dakota (Weber), **5**: 165-206.
hibernation, role of water (Hodson), **7**: 271-315.
in cattle droppings (Mohr), **13**: 275-298.
of abandoned farmlands in Oklahoma (Smith), **10**: 421-484.
of floodplain of Canadian River (Hefley), **7**: 345-402.
of soil (King), **9**: 270-286.
population problems in relation to insect outbreak, symposium paper (Chapman), **9**: 261-269.
populations in forest (Graham), **9**: 301-310.
in flower heads of *Bidens pilosa* (Needham), **10**: 431-446.
in relation to biological control, symposium paper (Smith), **9**: 311-320, 1 fig.
symposium (Chapman *et al.*), **9**: 259-320.
social (Emerson), **9**: 287-300.
Instinct in animals (Roberts), **12**: 352, 353, 404.
Instruments, see also Methods.
capturing slow-moving marine bottom organisms, **5**: 257.
cardio-vibrometer, for measuring heart rate of birds, **11**: 302-305.
collecting plankton, **10**: 58.
fumigation tank, **1**: 344-345.
gradient tank for studying aggregating behavior of fish, **1**: 6-7.
maintaining constant temperature in experimental chamber for insects, **1**: 339-341.
measuring interception of rain by plants, **10**: 247-250.
photometer for use under ice, **15**: 353-354.
plant sap extraction chamber, **5**: 8.
net for sandy beach collecting, **12**: 139.
sampling lake bottom, **9**: 541, 542, 578.
soil sampling, **19**: 152-153.
studying activity in crayfish, **14**: 371-373, 386-390.
toleration ranges of bottom fauna, **1**: 294.
testing effects of gravity, current and light on sessile marine invertebrates, **13**: 328, 329, 351.
tolerance of bees for temperature and humidity, **3**: 406.
trail-laying device for turtles, **20**: 355.
Integration of science and philosophy (Lindeman), **10**: 367-372.
Intelligence (Roberts), **12**: 404, 405.
Interception of rainfall by prairie grasses, weeds, and certain crop plants (Clark), **10**: 243-277, 8 fig.
Interrelations of habitat, growth rate, and associated vegetation in the aspen community of Minnesota and Wisconsin (Kittredge), **8**: 151-246, 16 fig.
Interspecies competition in flour beetle populations (Park), **18**: 265-307.
Intraspecific competition, role in haddock population (Herrington), **17**: 317-323.
Introductory note to symposium on Relation of ecology to human welfare—the human situation (Adams), **10**: 309-310.
Invasion, plant, of depleted range (Ellison), **19**: 98-111.
Inversion layers in relation to Sonoran Desert plant distribution (Turnage and Hinckley), **8**: 529-550.
Invertebrates, see also Animals; Biotic communities; Arthropods; Protozoa; Isopoda; Mollusca; Parasites; Pauropoda; Plankton; Sponges; *Cambarus*.
in dead logs (Savely), **9**: 321-385.

[Invertebrates]

- in litter and soil of Duke Forest (Pearse), **16**: 127-150.
of cedar glades in Tennessee (Meyer), **7**: 403-443.
of deciduous forest, effect of seasonal variability (Davidson), **2**: 305-333.
of disturbed deciduous forest (Dowdy), **14**: 193-222.
of forest, effects of airplane application of DDT (Hoffmann *et al.*), **19**: 1-46.
of Wisconsin sand beaches (Pennak), **10**: 537-615.
Iowa, activity of western fox squirrel (Hicks), **19**: 287-302.
ecology and management of redhead duck (Low), **15**: 35-69.
of spotted skunk (Crabb), **18**: 201-232.
effect of legumes and grasses on eroded soil (Ward), **19**: 145-171.
injury of trees by drought in prairie region (Albertson and Weaver), **15**: 393-434.
nesting and production of ring-necked pheasant (Baskett), **17**: 1-30.
prairie (Weaver and Fitzpatrick), **4**: 109-295.
effect of drought (Weaver and Albertson), **13**: 63-117.
recovery from drought (Weaver and Albertson), **14**: 393-479.
red fox (Scott), **13**: 427-479.
response of legumes to variations in soil and microclimate on eroded areas (Brewer), **17**: 471-500.
Isely, F. B. Researches concerning Texas Tettigoniidae, **11**: 457-475, 5 fig.
Seasonal succession, soil relations, numbers and regional distribution of northeastern Texas acridians, **7**: 317-344, 6 fig.
The relations of Texas Acrididae to plants and soils, **8**: 551-604, 7 fig.
Islands, see also Bahamas; Cuba; Guadaleanal; Guam; Hawaii; Jamaica; Puerto Rico; Tobago.
evolution and atrophy of wings in Carabidae (Darlington), **13**: 37-61.
Santa Cruz, see California.
Isolated faunas, Carabidae (Darlington), **13**: 37-61.
Isopoda of Michigan (Hatchett), **17**: 47-79.
Jacobs, Don L. An ecological life-history of *Spirodela polyrrhiza* (greater duckweed) with emphasis on the turion phase, **17**: 437-469, 28 fig.
Jamaica, evolution of Carabidae (Darlington), **13**: 37-61.
James Peak, see Colorado.
Jenkins, Dale W. and Stanley J. Carpenter. Ecology of the tree hole breeding mosquitoes of nearctic North America, **16**: 31-47, 5 fig.
Jewell, Minna E. An ecological study of the fresh-water sponges of northeastern Wisconsin, **5**: 461-504, 26 fig.
Jones, Sara Elizabeth, coauthor, see Leopold, Aldo.
Judy, C., coauthor, see Birge, E. A.
Junco, see Bogs; Marshes; Swamps.
Juniperus virginiana, associated invertebrates near Nashville, Tennessee (Meyer), **7**: 403-443.
Just, Theodor. Geology and plant distribution, symposium paper, **17**: 127-137.
Kaibab Plateau, see Arizona.
Kalamazoo, see Michigan.
Kansas, grasses, seed production (Cornelius), **20**: 1-29.
soil-root relationships (Weaver and Darland), **19**: 303-338.

- [Kansas]
injury of trees by drought (Albertson and Weaver),
15: 393-434.
prairie (Albertson), 7: 481-547; (Weaver and Fitzpatrick), 4: 109-295.
effect of drought (Albertson and Weaver), 12: 23-51; 14: 1-29; 16: 449-463; (Robertson), 9: 431-491; (Weaver and Albertson), 13: 63-117.
recovery from drought (Weaver and Albertson), 14: 393-479.
stabilization after drought (Weaver), 20: 251-270.
Kashmir, fishes (Hutchinson), 9: 145-182.
Katydids, see Tettigoniidae.
Keever, Catherine. Causes of succession on old fields of the Piedmont, North Carolina, 20: 229-250, 6 fig.
Kendeigh, S. Charles. Measurement of bird populations, 14: 67-106, 4 fig.
The rôle of environment in the life of birds, 4: 299-417, 27 fig.
and S. Prentiss Baldwin. Factors affecting yearly abundance of passerine birds, 7: 91-123.
Kennedy, Clarence Hamilton. The relation of American dragonfly-eating birds to their prey, 20: 103-142.
Kentucky, forests of Cumberland Mountains (Braun), 12: 413-447.
vegetation of Black Mountain (Braun), 10: 193-241.
Kerosene, use in mesquite eradication (Fisher *et al.*), 16: 109-126.
Ketchum, Bostwick H. The biochemical relations between marine organisms and their environment, symposium paper, 17: 309-315, 5 fig.
Keys, Isopoda of Michigan (Hatchett), 17: 51.
parasites of salamanders in North Carolina (Rankin), 7: 169-269.
King, Kenneth M. Population studies of soil insects, symposium paper, 9: 270-286.
Kittredge, Joseph, Jr. The interrelations of habitat, growth rate, and associated vegetation in the aspen community of Minnesota and Wisconsin, 8: 151-246, 16 fig.
Koeleria, see Grasses; Grassland; Prairie.
Korringa, P. Relations between the moon and periodicity in the breeding of marine animals, 17: 347-381, 5 fig.
Korstian, Clarence F. Perpetuation of spruce on cut-over and burned lands in the higher southern Appalachian Mountains, 7: 125-167, 20 fig.
Kozlowski, Theodore T. Light and water in relation to growth and competition of Piedmont forest tree species, 19: 207-231, 14 fig.
Krefting, Lauritz W. and Eugene I. Roe. The role of some birds and mammals in seed germination, 19: 269-286.
Krogh, August. Conditions of life at great depths in the ocean, symposium paper, 4: 430-439.
Conditions of life in the ocean, symposium paper, 4: 421-429.
Krumholz, Louis A. Reproduction in the western mosquito-fish, *Gambusia affinis affinis* (Baird and Girard), and its use in mosquito control, 18: 1-43, 16 fig.
Laboratory experiments vs. observations in natural habitats (Shelford), 4: 491-498.
Lackey, James B. A study of some ecologic factors affecting the distribution of Protozoa, 8: 501-527.
Lagoons, habitat of *Ostrea rhizophorae* (Mattox), 19: 339-356.
Lake Forest formation, post-glacial history (Potszger), 16: 211-250.
Lake(s), see also Limnological.
beach sand, Metazoan inhabitants (Pennak), 10: 537-615.
chemical factors, see Chemical factors.
development and plant succession in Vilas County, Wisconsin. Part I. The medium hard water lakes (Wilson), 5: 207-247, 7 fig.
distribution of sessile Rotatoria (Edmondson), 14: 31-66.
dynamics of plankton populations (Pennak), 16: 339-355.
ecology of fishes (Pearse), 4: 475-480.
fate of animals brought in by streams (Dendy), 14: 333-357.
fate of plankton carried out by streams (Chandler), 7: 445-479.
organic matter (Birge and Juday), 4: 440-474.
physical factors, see Physical factors.
sponges (Jewell), 5: 461-504.
Land, contributions to the sea (Nelson), 17: 337-346.
use and plant succession in Coon Valley, Wisconsin (Marks), 12: 113-133, 8 fig.
Larch, see *Larix*.
Larix laricina, in forest-tundra ecotone of Hudson Bay region (Marr), 18: 117-144.
occidentalis, relation to temporary forest types (Larsen), 10: 1-54.
Larrea tridentata, changes in osmotic value of cell sap (Mallery), 5: 1-35.
Larsen, J. A. Site factor variations and responses in temporary forest types in northern Idaho, 10: 1-54, 15 fig.
Larvae, Chironomid (Berg), 20: 83-101.
crane-fly, habitat requirements (Rogers), 3: 1-74.
insect, in flower heads of *Bidens pilosa* (Needham), 18: 431-446.
oyster, role of copper in setting, metamorphosis and distribution (Prytherch), 4: 47-107.
Phyllophaga, and forest seedling mortality (Stoeckeler and Limstrom), 12: 198.
sessile marine invertebrates (McDougall), 13: 321-374.
Larval mites, see *Ascoschöngastia*.
Lasioderma serricorne, life history and control (Powell), 1: 333-393; correction, 2: 384.
Lateral line organs, relation to aggregating behavior in catfish (Bowen), 1: 1-35.
Laubenfels, see de Laubenfels.
Lava, see Volcanic.
Lawrence, Donald B. Some features of the vegetation of the Columbia River gorge with special reference to asymmetry in forest trees, 9: 217-257, 10 fig.
Layer societies of Wasatch chaparral (Hayward), 18: 473-506.
Layering in sand-hill vegetation (Tolstead), 12: 281, 283, 288.
Leafhopper, beet, life history and populations (Harries and Douglass), 18: 45-79.
Leaf miners, see Chironomidae.
Leaf-size classes (Cain), 2: 502.
in grassland vegetation (Daubenmire), 12: 67, 73, 74.
Legumes, effect on eroded soil in Iowa (Ward), 19: 145-171.

- [Legumes]
response to variations in soil and microclimate (Brewer), **17**: 471-500.
Lemna, see *Spirodela*.
- Leopold, Aldo and Sara Elizabeth Jones. Phenological record for Sauk and Dana Counties, Wisconsin, 1935-1945, **17**: 81-122, 9 fig.
- Leapedeza sericea*, effect on soil (Ward), **19**: 145-171.
- Life-form classes (Cain), **2**: 475-508.
- Life-forms of Raunkiaer, in grassland vegetation (Daubenmire), **12**: 67, 73, 74.
- Life histories, aquatic invertebrates, Copepods, especially cysts (Moore), **9**: 537-582.
- oysters, *Ostrea rhizophorae* (Mattox), **10**: 352-354; *O. virginica* (Prytherch), **4**: 47-107.
- oyster "leech" (Pearse and Wharton), **8**: 605-655.
- sessile Rotatoria (Edmondson), **14**: 31-66; **15**: 141-172.
- snail Busycon (Magalhaes), **10**: 377-409.
- birds, role of environment (Kendeigh), **4**: 299-417; (Kendeigh and Baldwin), **7**: 91-123.
- bobwhite (Errington), **15**: 1-34.
- duck, *Nyroca americana* (Low), **15**: 35-69.
- Hungarian partridge (Yocom), **13**: 167-201.
- pheasant (Baskett), **17**: 1-30.
- fish, estuarine and marine (Gunter), **8**: 313-346.
- mosquitofish, *Gambusia* (Krumholz), **18**: 1-43.
- insects, beet leafhopper (Harries and Douglass), **10**: 45-79.
- Chironomidae (Berg), **20**: 83-101.
- crane-flies (Rogers), **3**: 1-74.
- dragonflies, relation to predation by birds (Kennedy), **20**: 103-142.
- Drosophila* (Chiang and Hodson), **20**: 173-206.
- firebrat, *Thermobia domestica* (Sweetman), **8**: 285-311.
- thatching ant, *Formica rufa obscuripes* (Weber), **5**: 165-206.
- tobacco beetle, *Lasioderma serricorne* (Powell), **1**: 333-393; correction, **2**: 384.
- Isopoda (Hatchett), **17**: 60-68.
- mammals, northern bison (Soper), **11**: 347-412.
- prairie spotted skunk (Crabb), **18**: 201-232.
- raccoon (Stuewer), **13**: 203-257.
- red fox (Scott), **13**: 427-479.
- Paupoda (Starling), **14**: 291-310.
- plants, effect on succession (Keever), **20**: 229-250.
- prairie plants (Blake), **5**: 405-460.
- Spirodela polyrhiza*, duckweed (Jacobs), **17**: 437-469.
- Sudan grass (de Peralta), **5**: 355-404.
- water hyacinth (Penfound and Earle), **18**: 447-472.
- reptiles, box turtle (Stickel), **20**: 351-378.
- desert tortoise (Woodbury and Hardy), **10**: 145-200.
- lizards, *Anniella pulchra* (Miller), **14**: 271-289; *Uma* spp. (Stebbins), **14**: 311-332.
- slider turtle (Cagle), **20**: 31-54.
- Life history of the slider turtle, *Pseudemys scripta troostii* (Holbrook), (Cagle), **20**: 31-54, 18 fig.
- Life in sea, effect of contributions from land (Nelson), **17**: 337-346.
- of Flathead Lake, Montana (Young), **5**: 91-163, 12 fig.
- Light, see also Physical factors.
and water in relation to growth and competition of
- [Light]
Piedmont forest tree species (Kozlowski), **19**: 207-231, 14 fig.
- effect on, animals (Roberts), **12**: 364.
- ant activity (Weber), **5**: 165-206.
- limbless lizard (Miller), **14**: 285.
- eyestalk chemical, and certain other factors as regulators of community activity for the crayfish, *Cambarus virilis* Hagen (Roberts), **14**: 359-392, 21 fig.
- in ice-covered lakes, relation to winter-kill of fish (Greenbank), **15**: 343-392.
- measurement in Chicago region (Park), **1**: 189-230.
- penetration into lakes (Chandler and Weeks), **15**: 441, 444, 445; (Oosting), **3**: 493-533; (Young), **5**: 91-163.
- relation to, growth of longleaf pine seedlings (Pessin), **8**: 115-149; of Sudan grass (de Peralta), **5**: 355-404.
- sessile marine invertebrates (McDougall), **13**: 321-374.
- survival of white pine (Smith), **10**: 373-420.
- water hyacinth (Penfound and Earle), **18**: 447-472.
- role in aggregating behavior in catfish (Bowen), **1**: 1-35.
- in life of birds (Kendeigh), **4**: 299-417; (Shaver), **3**: 535-597.
- Limestone, Fort Hays, mixed prairie on in Kansas (Albertson), **7**: 481-547.
- vegetation on in Cuba (Seifriz), **13**: 375-426.
- Limnological, see also Lakes; Chemical factors; Plankton.
- conditions in ice-covered lakes, especially as related to winter-kill of fish (Greenbank), **15**: 343-392, 34 fig.
- cycles in Colorado reservoir lakes (Pennak), **19**: 233-267.
- factors in abundance of fish in Lake Erie (Doan), **12**: 292-314.
- investigation of the microscopic benthic fauna of Douglas Lake, Michigan (Moore), **9**: 537-582, 33 fig.
- on Texas reservoir lakes (Harris and Silvey), **10**: 111-143, 6 fig.
- studies in Connecticut (Riley), **9**: 53-94, 15 fig.; Part III. The plankton of Linsley Pond (Riley), **10**: 279-306, 8 fig.; IV. The mechanisms of intermediary metabolism in stratified lakes (Hutchinson), **11**: 21-60, 34 fig.; VI. The quantity and composition of the bottom fauna of thirty-six Connecticut and New York lakes (Deevey), **11**: 413-455, 45 fig.
- of western Lake Erie. V. Relation of limnological and meteorological conditions to the production of phytoplankton in 1942 (Chandler and Weeks), **15**: 435-457, 4 fig.
- study of, Flathead Lake (Young), **5**: 91-163.
- Ham Lake, Minnesota (Oosting), **3**: 493-533.
- Lake Washington (Scheffer and Robinson), **9**: 95-143, 36 fig.
- Sodon Lake, Michigan (Newcombe and Slater), **20**: 207-227.
- the profundal bottom fauna of certain fresh-water lakes (Eggleton), **1**: 231-331, 63 fig.
- Limonium mexicanum*, ecology and anatomy (Purser), **12**: 105-107.
- Limstrom, Gustaf A., coauthor, see Stoeckeler, Joseph H.

- Lindeman, Eduard C. Ecology: an instrument for the integration of science and philosophy, symposium paper, **10**: 367-372.
- Lindley-Weller soil, Iowa (Ward), **19**: 145-171.
- Linguatulid parasites in fish and amphibians (Holl), **2**: 83-107.
- Linsley Pond, see Connecticut.
- Liquidambar, see Gum.
- Litter, see Soil.
- Littoral, see Coast; Coastal; Lakes.
- Livingston, Robert B. An ecological study of the Black Forest, Colorado, **19**: 123-144, 16 fig.
- Lizards, see *Anniella*; *Uma*.
- Loam, root development in (Duncan), **11**: 141-164.
- Local distribution and ecology of the plethodontid salamanders of the southern Appalachians (Hairs-on), **19**: 47-73, 25 fig.
- Locomotion, see Behavior.
- Locust, see *Robinia*.
- Loess, prairies and pastures on in Nebraska (Weaver and Bruner), **10**: 507-549.
- relation to root development of grasses (Weaver and Darland), **19**: 303-338.
- vegetation on in Washington and Idaho (Daubenmire), **12**: 53-79.
- Logging, effects on Wisconsin forest (Marks), **12**: 126.
- perpetuation of spruce on cut-over land in southern Appalachian Mountains (Korstian), **7**: 125-167.
- Logs, oak and pine, invertebrates in (Savely), **9**: 321-385.
- rotting, beetle habitat (Pearse *et al.*), **6**: 455-490.
- Longevity, see Life histories.
- Lotus corniculatus*, effect on soil (Ward), **19**: 145-171.
- Louisiana, dragonflies of Gulf Coast marshes (Wright), **13**: 481-497.
- effect of, rainfall and temperature on growth of pine (Coile), **6**: 533-562.
- vegetation on growth of longleaf pine seedlings (Pessin), **8**: 115-149.
- estuarine and marine fish (Gunter), **8**: 313-346.
- marshland plant communities (Penfound and Hathaway), **8**: 1-56.
- slider turtle (Cagle), **20**: 31-54.
- water hyacinth (Penfound and Earle), **10**: 447-472.
- Low, Jessop B. Ecology and management of the red-head, *Nyroca americana*, in Iowa, **15**: 35-69, 21 fig.
- Mackaye, Benton. Regional planning and ecology, symposium paper, **10**: 349-353.
- Mackenzie, northern bison (Soper), **11**: 347-412.
- MacLean, Archie, coauthor, see Shelford, V. E.
- Magalhaes, Hulda. An ecological study of snails of the genus *Busycon* at Beaufort, North Carolina, **18**: 377-409, 61 fig.
- Magnesium, see Chemical factors.
- Mallery, T. D. Changes in the osmotic value of the expressed sap of leaves and small twigs of *Larrea tridentata* as influenced by environmental conditions, **5**: 1-35, 5 fig.
- Mammals, see also Animals; *Odocoileus*; Opossum; Rabbit; Raccoons; Rodents; *Spilogale*; *Vulpes*.
- distribution in Utah in relation to soil types (Hardy), **15**: 71-108.
- on north slope of Uinta Mountains (Svihla), **2**: 47-81.
- role in seed germination (Krefting and Roe), **19**: 269-286.
- Management of, deer in forests of Vancouver Island (Cowan), **15**: 109-139.
- Hungarian partridge (Yocom), **13**: 167-201.
- prairie spotted skunk (Crabb), **18**: 201-232.
- raccoon (Stuewer), **13**: 203-257.
- redhead duck (Low), **15**: 35-69.
- Manganese of ocean floor (Hutchinson), **17**: 299-307.
- Mangrove, see *Rhizophora*.
- Manitoba, Churchill area, biotic communities (McClure), **13**: 1-35.
- Maple, see also *Acer*.
- beech, see Beech-maple.
- elm, see Elm-maple.
- Maps, see Illustrations, subheading Maps.
- Mariana Islands, see Guam.
- Marine, see also Ocean; Oceanographic; Oceanography.
- animals, see also Fish; Plankton; Shrimps; *Ostrea*.
- at Beaufort, North Carolina, *Busycon* (Magalhaes), **18**: 377-409; invertebrates in sand beaches (Pearse *et al.*), **12**: 135-190; sessile invertebrates (McDougall), **13**: 321-374; sponges (de Laubenfels), **17**: 31-46.
- biochemistry (Galtsoff), **4**: 481-490.
- breeding periodicity in relation to moon (Korringa), **17**: 347-381.
- mortality in relation to phytoplankton bloom (Gunter *et al.*), **18**: 309-324.
- bacteria, distribution and conditions of existence (Waksman), **4**: 523-529.
- biotic communities of the Pacific coast of North America. Part I. General survey of the communities (Shelford *et al.*), **5**: 249-332, 10 fig.; Part II. A study of the animal communities of a restricted area of soft bottom in San Juan channel (Wisner and Swanson), **5**: 333-354, 5 fig.
- coastal communities, organization (Allee), **4**: 541-554.
- communities of a tidal inlet at Cape Ann, Massachusetts: a study in bio-ecology (Dexter), **17**: 261-294, 17 fig.
- ecological studies on Santa Cruz Island, California (Hewatt), **16**: 185-208, 2 fig.
- ecology, symposium (Hutchinson *et al.*), **17**: 299-346.
- organisms, biochemical relations with environment (Ketchum), **17**: 309-315.
- present trends in investigation (Vaughan), **4**: 501-522.
- populations, dynamics of production (Clarke), **16**: 321-335.
- Marks, John B. Land use and plant succession in Coon Valley, Wisconsin, **12**: 113-133, 8 fig.
- Markus, H. C., coauthor, see Shelford, V. E.
- Marr, John W. Ecology of the forest-tundra ecotone on the east coast of Hudson Bay, **18**: 117-144, 29 fig.
- Marshall, Robert. An experimental study of the water relations of seedling conifers with special reference to wilting, **1**: 37-98, 15 fig.
- Marshes, see also Bogs; Swamps.
- of central Gulf coast, dragonflies (Wright), **13**: 481-497.
- of Iowa in relation to redhead management (Low), **15**: 35-69.
- of sand-hill region, Nebraska, vegetation (Tolstead), **12**: 255-292.
- of southeastern Louisiana, plant communities (Penfound and Hathaway), **8**: 1-56.
- of Wisconsin (Marks), **12**: 121.
- salt, of California coast (Purer), **12**: 81-111.

- Island
[Marshes] [salt]
of Connecticut coast (Miller and Egler), **20**: 143-172.
- Maryland, box turtle (Stickel), **20**: 351-378.
effect of airplane application of DDT on forest invertebrates (Hoffmann *et al.*), **19**: 1-46.
- Mason, Herbert L. Evolution of certain floristic associations in western North America, symposium paper, **17**: 201-210.
- Massachusetts, Berkshire Plateau vegetation (Egler), **10**: 145-192.
Cape Ann, marine communities of tidal inlet (Dexter), **17**: 261-294.
distribution of sessile Rotatoria (Edmondson), **14**: 31-66.
Georges Bank, distribution of larger planktonic Crustacea (Whiteley), **18**: 233-264.
haddock population (Herrington), **17**: 317-323.
population dynamics (Clarke), **16**: 321-335.
original forest types (Bromley), **5**: 61-89.
Woods Hole, distribution of Protozoa (Lackey), **8**: 501-527.
organization of marine coastal communities (Allee), **4**: 541-554.
- Mathematical formulation of biological productivity, symposium paper (Clarke *et al.*), **16**: 336-337.
- Mattox, N. T. Studies on the biology of the edible oyster, *Ostrea rhizophorae* Guilding, in Puerto Rico, **19**: 339-356, 14 fig.
- May beetle, see *Phyllophaga*.
- McBryde, James B. The vegetation and habitat factors of the Carrizo sands, **3**: 247-297, 24 fig.
- McClure, H. Elliott. Aspecton in the biotic communities of the Churchill area, Manitoba, **13**: 1-35, 24 fig.
- McDougall, Kenneth Dougal. Sessile marine invertebrates of Beaufort, North Carolina, **13**: 321-374, 19 fig.
- McLaughlin, W. T. Atlantic coastal plain plants in the sand barrens of northwestern Wisconsin, **2**: 335-383, 31 fig.
- McVaugh, Rogers. The vegetation of the granitic flat-rocks of the southeastern United States, **13**: 119-166, 36 fig.
- Meadow, see also Grassland.
animal census in northern New York (Wolcott), **7**: 1-90.
- Measurement of bird populations (Kendeigh), **14**: 67-106, 4 fig.
of daylight in the Chicago area and its ecological significance (Park), **1**: 189-230, 13 fig.
- Mechanisms of intermediary metabolism in stratified lakes (Hutchinson), **11**: 21-60, 34 fig.
- Medicine Bow Mountains, see Wyoming.
- Mesophytic forest on Black Mountain, Kentucky (Braun), **10**: 193-241.
- Mesquite, factors affecting eradication by oils and water-soluble chemicals (Fisher *et al.*), **16**: 109-126.
- Metabolic rate, comparison with heart rate in birds (Odum), **11**: 299-326.
- Metabolism, intermediary, in Connecticut lakes (Hutchinson), **11**: 21-60.
- Metamorphosis of oyster, role of copper (Prytherch), **4**: 47-107.
- Metazoa inhabiting sandy beaches of Wisconsin lakes (Pennak), **10**: 537-615.
- Meteorological and limnological conditions as factors in the abundance of certain fishes in Lake Erie (Doan), **12**: 293-314, 10 fig.
effects on phytoplankton (Chandler and Weeks), **15**: 435-457.
factors, see Weather.
- Methods, see also Instruments.
census of birds (Kendeigh), **14**: 67-106.
collecting, animals of sandy beach (Pearse *et al.*), **12**: 139, 140.
Chironomidae (Berg), **20**: 83-101.
forest invertebrates (Hoffmann *et al.*), **19**: 3-12.
turtles (Cagle), **20**: 31-54.
counting bacterial populations in beach sand (Humm), **12**: 168, 169.
kymograph records of activity, errors in use (Roberts), **12**: 393.
marking, desert tortoise (Woodbury and Hardy), **18**: 145-200.
fish (Doan), **12**: 299, 300.
Rotatoria tubes with carmine to determine growth and death rates (Edmondson), **15**: 148-150.
snail Busycon (Magalhaes), **18**: 377-409.
measuring infiltration rates of soils (Robertson), **9**: 436.
utilization of grasses by livestock (Heady), **20**: 55-81.
monolith section for study of soil-root relationships (Weaver *et al.*), **18**: 513-519; **19**: 305-307.
raising terrestrial isopods (Hatchett), **17**: 61.
sampling insect populations (King), **9**: 270-286.
stream drift and bottom animals (Dendy), **14**: 336-337.
testing viability of seeds recovered from birds and mammals (Krefting and Roe), **19**: 269-286.
- Mexico, see also Sonoran Desert.
Sonora, lizard Uma (Stebbins), **14**: 311-332.
- Meyer, Adelpia Martha. An ecological study of cedar glade invertebrates near Nashville, Tennessee, **7**: 403-443, 11 fig.
- Mice, see *Microtus*; Rodents.
- Michigan, bogs of Douglas Lake region (Gates), **12**: 213-254.
Chironomidae (Berg), **20**: 83-101.
Douglas Lake, benthic fauna (Moore), **9**: 537-582.
vertical distribution of plankton Rotifera (Campbell), **11**: 1-19.
fate of lake plankton in streams (Chandler), **7**: 445-479.
of stream drift animals carried into lakes (Dendy), **14**: 333-357.
fish winter-kill in ice-covered lakes (Greenbank), **15**: 343-392.
Isopoda (Hatchett), **17**: 47-79.
Kalamazoo County, vertebrate fauna of a farm (Allen), **8**: 347-436.
lakes, bottom fauna (Eggleton), **1**: 231-331; (Moore), **9**: 537-582.
primeval forest and post-glacial history (Patzger), **16**: 211-250.
raccoon (Stuever), **13**: 203-257.
Sodon Lake environmental factors (Newcombe and Slater), **20**: 207-227.
western mosquitofish, reproduction and use in mosquito control (Krumholz), **18**: 1-43.
- Microbrachion hebetor* and host, differential effects of environmental factors (Payne), **4**: 1-46.
- Microclimate, in dead logs (Savely), **9**: 321-385.
of sand-hill vegetation (Tolstead), **12**: 264, 265.

[Microclimate]

relation to revegetation of depleted range (Ellison), **19**: 95-121.

response of legumes to variations (Brewer), **17**: 471-500.

Microfauna, see Invertebrates; Plankton.

Microsere, in cattle droppings (Mohr), **13**: 275-298.

Microtus, predation by *Asio o. otus* (Tinbergen), **3**: 443-492.

Migration, see also Behavior.

of red-breasted nuthatches in Gaspé (Ball), **17**: 501-533, 8 fig.

of white-throated sparrow (Borror), **18**: 411-430.

plant (Just), **17**: 127-137; (Chaney), **17**: 139-148.

effect on vegetation of Bimini Islands (Howard), **20**: 317-349.

post-glacial, of snails of Tippecanoe River system (Wright), **2**: 233-259.

seasonal, of mule deer (Russell), **2**: 1-46.

Miller, Charles M. Ecologic relations and adaptations of the limbless lizards of the genus *Anniella*, **14**: 271-289, 14 fig.

Miller, William R. and Frank E. Egler. Vegetation of the Wequetequoek-Pawcatuck tidal-marshes, Connecticut, **20**: 143-172, 19 fig.

Minckler, Leon S. Old field reforestation in the Great Appalachian Valley as related to some ecological factors, **16**: 87-108, 19 fig.

Mineral content of lake water, see Chemical factors. elements, in marine invertebrates (Galtsoff), **4**: 481-490.

Minnesota, Anoka Sand Plain, pollen spectrum studies (Artist), **9**: 493-535.

aspen community (Kittredge), **8**: 151-246.

"Big Woods" (Daubenmire), **6**: 233-268.

bogs (Conway), **19**: 173-206.

injury of trees by drought in prairie region (Albertson and Weaver), **15**: 393-434.

physical-chemical variables in Ham Lake (Oosting), **3**: 493-533.

plankton ecology of upper Mississippi River (Reinhard), **1**: 395-464.

prairie (Weaver and Fitzpatrick), **4**: 109-295.

role of birds and mammals in seed germination (Krefting and Roe), **19**: 269-286.

of water in insect hibernation (Hodson), **7**: 271-315.

Spirodela polyrrhiza (Jacobs), **17**: 437-469.

Mississippi River, delta, dragonflies (Wright), **13**: 481-497.

plankton ecology between Minneapolis and Winona (Reinhard), **1**: 395-464.

Mississippi (State), distribution of Protozoa (Lackey), **8**: 501-527.

dragonflies of Gulf coast marshes (Wright), **13**: 481-497.

slider turtle (Cagle), **20**: 31-54.

Missouri, prairie (Weaver and Fitzpatrick), **4**: 109-295. stabilization of grassland after drought (Weaver), **20**: 251-270.

Mites, see Invertebrates; Arthropods; *Ascoschöngastia*. Mixed, mesophytic forest, association (Braun), **12**: 413-447.

in southern New England (Bromley), **5**: 61-89.

prairie, see Prairie.

Mohr, Carl O. Cattle droppings as ecological units, **13**: 275-298, 4 fig.

Moisture, see also Humidity; Precipitation; Soil moisture; Water.

[Moisture]

adsorption by charcoal in forest soils (Tryon), **18**: 81-115.

effect on firebrat (Sweetman), **8**: 285-311.

on limbless lizard (Miller), **14**: 284, 285.

relation to survival of white pine (Smith), **10**: 373-420.

relations in the chaparral of the Santa Monica Mountains, California (Bauer), **6**: 409-454, 17 fig.

Mollusca, see also Invertebrates.

of the Tippecanoe River system (Wright), **2**: 233-259.

Monanthochloe littoralis, ecology and anatomy (Purer), **12**: 101-104.

Monolith method of studying root systems (Weaver *et al.*), **18**: 513-519; **19**: 305-307.

Montana, bluebunch wheatgrass, and height-weight relations of range grasses (Heady), **20**: 55-81.

Flathead Lake, limnology (Young), **5**: 91-163.

injury of trees by drought in prairie region (Albertson and Weaver), **15**: 393-434.

mountain climates (Baker), **14**: 223-254.

Moon, relation to periodicity in breeding of marine animals (Korringa), **17**: 347-381.

Moore, George M. A limnological investigation of the microscopic benthic fauna of Douglas Lake, Michigan, **9**: 537-582, 33 fig.

Morphology of coastal sand dune plants (Purer), **6**: 1-87.

Mortality, see Death.

Mosquitoes, annual cycle in Brazilian forest (Davis), **15**: 243-296.

control by mosquitofish (Krumholz), **18**: 1-43.

tree hole breeders of North America (Jenkins and Carpenter), **16**: 31-47.

Mosquitofish, see *Gambusia*.

Moss, see *Sphagnum*.

Moths, flour, see *Ephestia*.

Mountain(s), see Appalachian; Rocky.

climates of the western United States (Baker), **14**: 223-254, 21 fig.

Medicine Bow, see Wyoming.

relation to evolution and atrophy of wings in Carabidae (Darlington), **13**: 37-61.

Santa Marta, see Colombia.

Santa Monica, see California.

Sierra de Nipe, see Cuba.

Sierra Nevada, see California.

White, see New Hampshire.

Mouse, see Mice.

Movement, see Behavior.

Mowing, effect on vegetation of peat land (Frolik), **11**: 117-140; of tidal-marshes (Miller and Egler), **20**: 143-172.

Mueller, Irene M. An experimental study of the rhizomes of certain prairie plants, **11**: 165-188, 35 fig.

Muhlenbergia, see also Grasses; Grassland; Prairie. *montana*, relation to reproduction of ponderosa pine (Pearson), **12**: 315-338.

Mule deer, see *Odocoileus*.

Mus musculus, populations on Guam (Baker), **16**: 393-408.

Muskrat, relation to plant communities of Louisiana marshlands (Penfound and Hathaway), **8**: 46-47.

Mycorrhizae, effect of charcoal in forest soils (Tryon), **18**: 81-115.

- [Mycorrhizae]
of *Pinus contorta* (Preston), **12**: 464-466.
Myriapoda, see Pauropoda; Invertebrates.
- National Park, see Wood Buffalo; Yellowstone; Yosemite; Zion.
- Natural areas, symposium (Just *et al.*), **17**: 123-234.
floristic areas in boreal America, symposium paper (Raup), **17**: 221-234, 8 fig.
vegetation of the island of Tobago, British West Indies (Beard), **14**: 135-163, 11 fig.
- Nature and degree of recovery of grassland from the great drought of 1933 to 1940 (Weaver and Albertson), **14**: 393-479, 136 fig.
- Nebraska, Cherry County, vegetation (Tolstead), **12**: 255-292.
injury of trees by drought (Albertson and Weaver), **15**: 393-434.
interception of rain by plants (Clark), **10**: 243-277.
prairie (Weaver and Fitzpatrick), **4**: 109-295.
effect of drought (Robertson), **9**: 431-491; (Weaver and Albertson), **13**: 63-117.
recovery from drought (Weaver and Albertson), **14**: 393-479.
stabilization after drought (Weaver), **20**: 251-270.
succession after drought (Weaver and Bruner), **15**: 297-319.
prairies and pastures of dissected loess plains (Weaver and Bruner), **18**: 507-549.
principles of competition illustrated by Sudan grass (de Peralta), **5**: 355-404.
rhizomes of prairie plants (Mueller), **11**: 165-188.
soil-root relationships of native grasses (Weaver and Darland), **19**: 303-338.
viability and germination of seeds and early life history of prairie plants (Blake), **5**: 405-460.
- Needham, James C. Ecological notes on the insect population of the flower heads of *Bidens pilosa*, **18**: 431-446.
- Needle grass, see *Stipa*.
- Nelson, Thurlow C. Some contributions from the land in determining conditions of life in the sea, symposium paper, **17**: 337-346, 7 fig.
- Nematodes, see also Invertebrates.
new species (Harkema), **6**: 219-220.
- Nesting, see also Life histories.
and production of the ring-necked pheasant in north-central Iowa (Baskett), **17**: 1-30, 20 fig.
of birds in elm-maple forest (Twomey), **15**: 173-205.
of termites (Emerson), **8**: 247-284.
- Netherlands, host-predator relations between *Asio o. otus* and its prey (Tinbergen), **3**: 443-492.
relation between moon and breeding of marine animals (Korringa), **17**: 347-381.
- New species, nematode, *Syphacia peromysci* (Harkema), **6**: 219-220; sponge, *Calyx poa* (de Laubenfels), **17**: 36-37.
- New England, southern, original forest types (Bromley), **5**: 61-89.
- New Hampshire, development and survival of white pine (Smith), **10**: 373-420.
distribution of sessile Rotatoria (Edmondson), **14**: 31-66.
hemlock annual rings (Schumacher and Day), **9**: 287-429.
White Mountains, evolution of Carabidae (Darlington), **13**: 37-61.
- New Jersey, distribution of Protozoa (Lackey), **8**: 501-527.
- [New Jersey]
distribution of sessile Rotatoria (Edmondson), **14**: 31-66.
New Mexico, mountain climates (Baker), **14**: 223-254.
New York (State), abundance of fish in Lake Erie (Doan), **12**: 293-314.
aggregation behavior of snakes (Noble and Clausen), **6**: 269-316.
animal census of pastures and meadow (Wolcott), **7**: 1-90.
distribution of sessile Rotatoria (Edmondson), **14**: 31-66.
lakes, bottom fauna (Deevey), **11**: 413-455.
soil changes in relation to transition from forest to pasture (Stewart), **3**: 107-145.
- Newcombe, Curtis L. and John V. Slater. Environmental factors of Sodon Lake—a dichothermic lake in southeastern Michigan, **20**: 207-227, 9 fig.
- Night, see Nocturnalism.
- Nitrogen, see also Chemical factors.
cycle of marine sand beaches (Humm), **12**: 165.
fixation by nodule bacteria of *Robinia pseudoacacia* (Chapman), **5**: 37-60.
- Noble, G. K. and H. J. Clausen. The aggregation behavior of *Storeria dekayi* and other snakes, with special reference to the sense organs involved, **6**: 269-316, 15 fig.
- Nocturnalism of raccoon (Stuewer), **13**: 203-257.
of salamanders (Hairston), **19**: 47-73.
—the development of a problem (Park), **10**: 485-536.
- Nodule bacteria, see Nitrogen fixation.
- Nomenclature, see Terminology.
- North America, dragonfly-eating birds (Kennedy), **20**: 103-142.
eastern, development of deciduous forests (Braun), **17**: 211-219.
ecology of house wren (Kendeigh), **4**: 299-417.
grassland biome (Carpenter), **10**: 617-684.
origin and development of natural floristic areas, symposium (Just *et al.*), **17**: 123-234.
tree hole breeding mosquitoes (Jenkins and Carpenter), **16**: 31-47.
western, evolution of floristic associations (Mason), **17**: 201-210.
- North Carolina, Beaufort, plant and animal life in sand beaches (Pearse *et al.*), **12**: 135-190.
sessile marine invertebrates (McDougall), **13**: 321-374.
snails of genus *Busycon* (Magalhaes), **18**: 377-409.
sponges of brackish water (de Laubenfels), **17**: 31-46.
coastal plain sands, vegetation and habitat factors (Wells and Shunk), **1**: 465-520.
- Duke Forest, microfauna (Pearse), **16**: 127-150.
Pauropoda (Starling), **14**: 291-310.
root development in three soil types (Duncan), **11**: 141-164.
- fish and amphibians, ecology in relation to parasites (Holl), **2**: 83-107.
invertebrates in dead logs (Savely), **9**: 321-385.
life history and control of tobacco beetle (Powell), **1**: 333-393; correction, **2**: 384.
parasites of frogs and toads (Brandt), **6**: 491-532.
of rodents (Harkema), **6**: 151-232.
of salamanders (Rankin), **7**: 169-269.
Passalus cornutus (Pearse *et al.*), **6**: 455-490.

- [North Carolina]
 perpetuation of spruce on cut-over land (Korstian), **7**: 125-167.
 Piedmont region, light and water in relation to growth and competition (Kozlowski), **10**: 207-231.
 shortleaf pine stands on abandoned fields (Billings), **8**: 437-499.
 succession on abandoned fields (Keever), **20**: 229-250.
 plethodontid salamanders in Appalachians (Hairs-ton), **19**: 47-73.
 vegetation of Roan Mountain (Brown), **11**: 61-97.
 on granitic flat-rocks (McVaugh), **13**: 119-165.
 white oak annual rings (Schumacher and Day), **9**: 387-429.
 North Dakota, biology of thatching ant, *Formica rufa obscuripes* (Weber), **5**: 165-206.
 characteristics of major grassland types (Hanson and Whitman), **8**: 57-114.
 injury of trees by drought (Albertson and Weaver), **15**: 393-434.
 Norway pine, see *Pinus resinosa*.
 spruce, see *Picea excelsa*.
 Nuthatches, red-breasted, migration (Ball), **17**: 501-533.
 Nutrient(s), see also Chemical factors.
 salts, effect on distribution of Ceratium in ocean (Graham), **11**: 99-116.
Nyroca americana, ecology and management (Low), **15**: 35-69.
 Oahu, see Hawaii.
 Oak, see also *Quercus*.
 forest, southern New England (Bromley), **5**: 61-89.
 hickory association, biotic communities (Dirks-Edmunds), **17**: 235-260.
 on Carrizo sands, Texas (McBryde), **3**: 247-297.
 logs, invertebrates in (Savely), **9**: 321-385.
 Oakes, W. O., coauthor, see Holch, A. E.
 Observations on *Ascoschöngastia indica* (Hirst 1915) (Acarinida: Trombiculidae), (Wharton), **10**: 151-184, 24 fig.
 on the history and scope of population ecology, symposium paper (Park), **16**: 313-320, 1 fig.
 on the microfauna of the Duke Forest (Pearse), **16**: 127-150, 12 fig.
 Ocean, see also Marine; Chemical factors.
 effect of contributions from land (Nelson), **17**: 337-346.
 geochemistry (Hutchinson), **17**: 299-307.
 water, discoloration by plankton, in relation to mass mortality of animals (Gunter *et al.*), **18**: 309-324.
 Oceanographic consideration of the dinoflagellate genus Ceratium (Graham), **11**: 99-116, 14 fig.
 Oceanography, of Georges Banks (Whiteley), **10**: 233-264.
 symposium (Vaughan *et al.*), **4**: 499-554.
Odocoileus hemionus, of Kaibab Plateau (Rasmussen), **11**: 229-275.
 of Pacific coast forest, food habits (Cowan), **15**: 109-139.
 of Wasatch chaparral (Hayward), **10**: 473-506.
 seasonal migration (Russell), **2**: 1-46.
 Odors, effect on oviposition of *Lasioderma serricorne* (Powell), **1**: 333-393; correction, **2**: 384.
 Odum, Eugene P. Variations in the heart rate of birds: a study in physiological ecology, **11**: 299-326, 22 fig.
 Ohio, beech-maple community (Williams), **6**: 317-408.
 Cincinnati region, distribution of Protozoa (Lackey), **8**: 501-527.
 Cleveland region, bird populations (Kendeigh), **14**: 67-106.
 invertebrates in disturbed deciduous forest (Dowdy), **14**: 193-222.
 effect of *Robinia pseudoacacia* on growth of associated trees (Chapman), **5**: 37-60.
 factors affecting yearly abundance of passerine birds (Kendeigh and Baldwin), **7**: 91-123.
 forests of Illinoian till plain (Braun), **6**: 89-149.
 grazed and ungrazed woodlands (Dambach), **14**: 255-270.
 Lake Erie, abundance of fish (Doan), **12**: 293-314.
 phytoplankton production (Chandler and Weeks), **15**: 435-457.
 repeat records of white-throated sparrows (Borror), **10**: 411-430.
 Oils, use in mesquite eradication (Fisher *et al.*), **16**: 109-126.
 Okefinokee, see Georgia.
 Oklahoma, Cleveland County, vegetation and insects of Canadian River floodplain (Hefley), **7**: 345-402.
 injury of trees by drought in prairie region (Albertson and Weaver), **15**: 393-434.
 recovery of grassland from drought (Weaver and Albertson), **14**: 393-479.
 succession on eroded abandoned farmland of Western Cross Timbers and Red Beds regions (Smith), **10**: 421-484.
 vegetation (Bruner), **1**: 99-188.
 Old field reforestation in the Great Appalachian Valley as related to some ecological factors (Minckler), **16**: 87-108, 19 fig.
 Ondatra, see Muskrat.
 Ontario, abundance of fish in Lake Erie (Doan), **12**: 293-314.
 Oosting, Henry J. Physical-chemical variables in a Minnesota lake, **3**: 493-533, 16 fig.
 and W. D. Billings. The red fir forest of the Sierra Nevada: Abietum magnificae, **13**: 259-274, 5 fig.
 Opossum-raccoon relationships (Stuewer), **13**: 203-257.
 Oregon, cedar-hemlock association, biotic communities (Dirks-Edmunds), **17**: 235-260.
 mountain climates (Baker), **14**: 223-254.
 vegetation of Columbia River gorge, especially asymmetry of trees (Lawrence), **9**: 217-257.
 Organic matter, see also Chemical factors.
 in lakes (Birge and Juday), **4**: 440-474.
 in water of lake sand beaches (Pennak), **10**: 537-615.
 Organismic concept of natural community (Roberts), **12**: 351-352.
 Organization of marine coastal communities (Allee), **4**: 541-554.
 Orientation in animals (Roberts), **12**: 351-370.
 Origin and development of natural floristic areas with special reference to North America, symposium (Just *et al.*), **17**: 123-234.
 of flora of granitic flat-rocks (McVaugh), **13**: 119-165.
 of human ecology (Hollingshead), **10**: 354-366.
 Original forest types of southern New England (Bromley), **5**: 61-89, 8 fig.
 Orthopodomyia, see Mosquitoes.
 Orthoptera, see Grasshoppers.

- Osmotic value of cell sap of *Larrea*, effect of environmental conditions (Mallery), **5**: 1-35.
- Ostrea edulis*, breeding periodicity in relation to moon (Korringa), **17**: 347-381.
- rhizophorae* in Puerto Rico (Mattox), **19**: 339-356.
- sp., predation by oyster "leech" (Pearse and Wharton), **8**: 605-655.
- virginica*, role of copper in setting, metamorphosis and distribution (Prytherch), **4**: 47-107.
- Outbreaks in insect populations (Chapman), **9**: 261-269; (Graham), **9**: 301-310; (King), **9**: 270-286.
- Overgrazing, see Grazing.
- Oviposition of *Lasioderma serricorne*, effect of environment (Powell), **1**: 333-393; correction, **2**: 384.
- Owl, see *Asio*.
- Oxygen content, see Chemical factors.
- in ice-covered lakes (Greenbank), **15**: 343-392.
- relations of water hyacinth (Penfound and Earle), **18**: 447-472.
- tension of fish blood (Powers *et al.*), **2**: 385-473.
- Oyster, see *Ostrea*.
- "leech," *Stylochus inimicus* Palombi, associated with oysters on the coasts of Florida (Pearse and Wharton), **8**: 605-655, 37 fig.
- Pacific coast, see also California.
- marine biotic communities (Shelford *et al.*), **5**: 249-354.
- Ocean, Ceratium life zones (Graham), **11**: 99-116.
- region, see Guadalcanal; Guam; Hawaii.
- Paleobotany, see Pollen.
- Palmer, Fletcher G., coauthor, see Storer, Tracy I.
- Palouse, see Washington.
- Panama, termite nests, see Termite.
- Panicum*, see Grasses; Grassland; Prairie.
- Parasites, see also *Ascoschöngastia*.
- helminth and linguatulid, in fish and amphibians (Holl), **2**: 83-107.
- host, see Host-parasite.
- nocturnalism (Park), **10**: 485-536.
- of certain North Carolina Salientia (Brandt), **6**: 491-532.
- of crane-flies in Florida (Rogers), **3**: 1-74.
- of desert tortoise (Woodbury and Hardy), **18**: 145-200.
- of flour beetles (Park), **18**: 265-307.
- of North Carolina salamanders (Rankin), **7**: 169-269.
- of *Passalus cornutus* (Pearse *et al.*), **6**: 455-490.
- of some North Carolina rodents (Harkema), **6**: 151-232, 5 fig.
- relation to biological control of insects (Smith), **9**: 311-320.
- Parasitism, relation to behavior (Roberts), **12**: 339-412.
- Parch blight, effect on trees (Lawrence), **9**: 217-257.
- Parietal eye of lizard *Uma* (Stebbins), **14**: 311-332.
- Park, Orlando. Nocturnalism—the development of a problem, **10**: 485-536.
- The measurement of daylight in the Chicago area and its ecological significance, **1**: 189-230, 13 fig.
- Park, Thomas. Experimental studies of interspecies competition. I. Competition between populations of the flour beetles, *Tribolium confusum* Duval and *Tribolium castaneum* Herbst, **18**: 265-307, 14 fig.
- Some observations on the history and scope of population ecology, symposium paper, **16**: 313-320, 1 fig.
- Particulate and dissolved matter in inland lakes symposium paper (Birge and Juday), **4**: 440-474, 4 fig.
- Partridge, see Hungarian.
- Passalus cornutus*, ecology (Pearse *et al.*), **6**: 455-490.
- Pasture, see also Grazing; Prairie; Range.
- animal census in northern New York (Wolcott), **7**: 1-90.
- soil changes in transition from forest (Stewart), **3**: 107-145.
- Patterns of distribution in modern plants (Camp), **17**: 159-183.
- Patterson, Marguerite T., coauthor, see Pearse, A. S.
- Paupoda, ecological studies (Starling), **14**: 291-310.
- Payne, Nellie M. The differential effect of environmental factors upon *Microbracon hebetor* Say (Hymenoptera: Braconidae) and its host, *Ephestia kuehniella* Zeller (Lepidoptera: Pyralidae). II, **4**: 1-46, 4 fig.
- Pearse, A. S. Ecology of lake fishes, symposium paper, **4**: 475-480, 1 fig.
- Observations on the microfauna of the Duke Forest, **16**: 127-150, 12 fig.
- H. J. Humm and G. W. Wharton. Ecology of sand beaches at Beaufort, North Carolina, **12**: 135-190, 24 fig.
- Marguerite T. Patterson, John S. Rankin and G. W. Wharton. The ecology of *Passalus cornutus* Fabricius, a beetle which lives in rotting logs, **6**: 455-490, 43 fig.
- and G. W. Wharton. The oyster "leech," *Stylochus inimicus* Palombi, associated with oysters on the coasts of Florida, **8**: 605-655, 37 fig.
- Pearson, G. A. Herbaceous vegetation a factor in natural regeneration of ponderosa pine in the Southwest, **12**: 315-338, 12 fig.
- Pearson, Jay Frederick Wesley. Studies on the ecological relations of bees in the Chicago region, **3**: 373-441, 1 fig.
- Peat, see also Pollen.
- formation in bogs (Gates), **12**: 213-254.
- in bogs of Minnesota (Conway), **19**: 173-206.
- moss, see *Spagnum*.
- vegetation on in Wisconsin (Frolik), **11**: 117-140.
- Pelecypoda, see Invertebrates.
- Pendleton, Robert C. The rain shadow effect on the plant formations of Guadalcanal, **19**: 75-93, 12 fig.
- Penfound, William T. and T. T. Earle. The biology of the water hyacinth, **18**: 447-472, 9 fig.
- and Edward S. Hathaway. Plant communities in the marshlands of southeastern Louisiana, **8**: 1-56, 17 fig.
- Pennak, Robert W. Annual limnological cycles in some Colorado reservoir lakes, **19**: 233-267, 26 fig.
- Ecology of the microscopic Metazoa inhabiting the sandy beaches of some Wisconsin lakes, **10**: 537-615, 16 fig.
- The dynamics of fresh-water plankton populations, symposium paper, **16**: 339-355, 7 fig.
- Pennsylvania, distribution of sessile Rotatoria (Edmondson), **14**: 31-66.
- effect of airplane application of DDT on forest invertebrates (Hoffmann *et al.*), **19**: 1-46.
- forests of High Plateaus (Hough and Forbes), **13**: 299-320.
- Peralta, see de Peralta.
- Perdix, see Hungarian partridge.

- Periodicity, see also Seasonal; Annual; Diurnal.
concept (Cain), **2**: 491.
diurnal, tidal and seasonal, in Busycon (Magalhães), **18**: 377-409.
in activity of crayfish (Roberts), **14**: 359-392.
of organisms (Roberts), **12**: 366-368, 404.
in bobwhite populations (Errington), **15**: 21-32.
in breeding of marine animals, relation to moon (Korringa), **17**: 347-381.
- Peromyscus* spp. populations of Sierra Nevada (Storer et al.), **14**: 165-192.
- Perpetuation of spruce on cut-over and burned lands in the higher southern Appalachian Mountains (Korstian), **7**: 125-167, 20 fig.
- Pessin, L. J. The effect of vegetation on the growth of longleaf pine seedlings, **8**: 115-149, 8 fig.
- pH, see Hydrogen-ion concentration; Chemical factors.
- Phasianus*, see Pheasant.
- Pheasant, on Michigan farm (Allen), **8**: 347-436.
reproduction (Baskett), **17**: 1-30.
- Phenological, see also Seasonal; Aspect.
record for Sauk and Dane Counties, Wisconsin, 1935-1945 (Leopold and Jones), **17**: 81-122, 9 fig.
- Philosophy and science (Lindeman), **10**: 367-372.
- Phosphates, see Chemical factors.
- Photosynthesis, in Piedmont forest species (Kozlowski), **19**: 207-231.
- Phragmites*, see Bogs; Marshes; Swamps.
- Phyllophaga* larvae and forest seedling mortality (Stoeckeler and Limstrom), **12**: 198.
- Phylogeny of behavior as demonstrated by termite nests (Emerson), **8**: 247-284.
- Physical-chemical variables in a Minnesota lake (Oosting), **3**: 493-544, 16 fig.
ecology of the firebrat, *Thermobia domestica* (Packard), (Sweetman), **8**: 285-311, 3 fig.
factors affecting fresh-water plankton populations (Pennak), **16**: 348-349.
effect on sponges, in brackish water (de Laubenfels), **17**: 39-41; in Wisconsin lakes (Jewell), **5**: 461-504.
in Colorado reservoir lakes (Pennak), **19**: 233-267.
in lakes, see also Lakes; Limnological.
in Sodon Lake, Michigan (Newcombe and Slater), **20**: 207-227.
in upper Mississippi River (Reinhard), **1**: 395-464.
relation to activity of crayfish (Roberts), **14**: 359-392.
properties of soil associated with development of pine stands on abandoned fields (Billings), **8**: 437-499.
of soil, effect of charcoal (Tryon), **18**: 81-115.
- Physiognomy, basis for comparing plant communities (Shantz), **10**: 311-342.
- Physiographic succession on abandoned eroded farmland (Smith), **10**: 421-484.
- Physiology of birds, effect of environmental variation (Kendeigh), **4**: 299-417.
- Phytogeography (Cain), **17**: 185-200.
- Phytoplankton, see Plankton.
- Phytosociological concepts (Cain), **2**: 475-508.
- Phytosociology of Appalachian Mountains (Brown), **11**: 61-97.
of the primeval forest in central-northern Wisconsin and upper Michigan, and a brief post-glacial history of the Lake Forest formation (Potzger), **16**: 211-250, 31 fig.
- Piaropus crassipes* (Penfound and Earle), **18**: 447-472.
- Picea engelmannii*, see Spruce.
excelsa, water relations of seedlings (Marshall), **1**: 37-98.
glauca and *P. mariana* of forest-tundra ecotone of Hudson Bay (Marr), **10**: 117-144.
mariana, in bogs, Minnesota (Conway), **19**: 193-195.
rubra, perpetuation on cut-over land (Korstian), **7**: 125-167.
sitchensis in Alaska (Cooper), **12**: 1-22.
spp., pollen in Minnesota bogs (Artist), **9**: 493-535.
seedling survival (Stoeckeler and Limstrom), **12**: 208.
- Piedmont, see North Carolina.
- Pike's Peak, see Colorado.
- Pile-dwelling organisms (McDougall), **13**: 321-374.
- Pine, see also *Pinus*.
and associated forage species in Colorado and Wyoming (Costello), **14**: 118-119, 121-122, 126-127.
forest, southern New England (Bromley), **5**: 61-89.
logs, invertebrates in (Savely), **9**: 321-385.
pollen in Minnesota bogs (Artist), **9**: 493-535.
southern, effect of rainfall and temperature on radial growth (Coile), **6**: 533-562.
- Pinus*, see also Pine.
banksiana invading Wisconsin prairies (Thomson), **10**: 685-717.
seedling development and survival (Stoeckeler and Limstrom), **12**: 191-212.
caribaea, see Pine, southern.
contorta, growth and development of root systems (Preston), **12**: 449-468.
echinata, see also Pine, southern.
effect of precipitation on annual rings (Schumacher and Day), **9**: 387-429.
growth (Kozlowski), **19**: 207-231.
in Oklahoma (Bruner), **1**: 141-142.
stands in abandoned fields (Billings), **8**: 437-499.
monticola, relation to temporary forest types (Larsen), **10**: 1-54.
palustris, see also Pine, southern.
effect of precipitation on annual rings (Schumacher and Day), **9**: 387-429.
effect of vegetation on growth of seedlings (Pessin), **8**: 115-149.
in succession on coarser sands of North Carolina coastal plain (Wells and Shunk), **1**: 465-520.
ponderosa, distribution and asymmetry in Columbia River gorge (Lawrence), **9**: 217-257.
in Black Forest, Colorado (Livingston), **19**: 123-144.
relation to temporary forest types (Larsen), **1**: 1-54.
reproduction, effect of herbaceous vegetation (Pearson), **12**: 315-338.
- resinosa*, seedling development and survival (Stoeckeler and Limstrom), **12**: 191-212.
water relations of seedlings (Marshall), **1**: 37-98.
and *P. strobus* in primeval forest in Wisconsin and Michigan (Potzger), **16**: 211-250.
- strobus*, effect of charcoal in soil (Tryon), **18**: 81-115.
in forests of Allegheny Plateau (Hough and Forbes), **13**: 299-320.
seedling survival (Stoeckeler and Limstrom), **12**: 208.
survival and development in New England (Smith), **10**: 373-420.
- taeda*, see also Pine, southern.
growth (Kozlowski), **19**: 207-231.

- Pioneer communities, alpine (Cox), **3**: 299-372.
- Plains, see *Prairie*.
- Plankton, see also *Limnological*; *Cladocera*; *Copepoda*; *Rotifera*; *Ceratium*.
- bottom fauna ratio in lakes (Deevey), **11**: 413-455.
- dynamics of fresh-water populations (Pennak), **16**: 339-355.
- ecology of the upper Mississippi, Minneapolis to Winona (Reinhard), **1**: 395-464, 11 fig.
- fate when carried out of lakes into streams (Chandler), **7**: 445-479.
- food of Chironomidae (Berg), **20**: 83-101.
- marine, bacteria in (Waksman), **4**: 523-529.
- distribution on Georges Bank (Whiteley), **18**: 233-264.
- environment (Krogh), **4**: 421-429, 430-439.
- of Puget Sound and vicinity (Shelford *et al.*), **5**: 249-354.
- population dynamics (Clarke), **16**: 321-335.
- relation to chemical content of sea water (Ketchum), **17**: 309-315.
- relation to mass mortality of animals on west coast of Florida (Gunter *et al.*), **18**: 309-324.
- relation to oyster (Mattox), **19**: 349-350.
- of Flathead Lake, Montana (Young), **5**: 91-163.
- of Lake, Erie (Chandler and Weeks), **15**: 435-457; (Doan), **12**: 299, 307, 308.
- Washington (Scheffer and Robinson), **9**: 95-143.
- of lakes, of Colorado (Pennak), **19**: 249-253; Connecticut (Riley), **9**: 53-94; Texas (Harris and Silvey), **10**: 130-139; Wisconsin (Birge and Juday), **4**: 440-474.
- of Linsley Pond, Connecticut (Riley), **10**: 279-306.
- relation to oxygen in ice-covered lakes (Greenbank), **15**: 343-392.
- Planning, regional, and ecology (Mackaye), **10**: 349-353.
- Plant(s), see also *Vegetation*; *Forest*.
- cell sap, osmotic value in *Larrea tridentata* (Malley), **5**: 1-35.
- communities, see also *Communities*.
- in the marshlands of southeastern Louisiana (Penfound and Hathaway), **8**: 1-56, 17 fig.
- distribution, see *Distribution*.
- ecology, concepts and terminology (Cain), **2**: 475-508.
- of the coastal salt marshlands of San Diego County, California (Purer), **12**: 81-111, 16 fig.
- relation to human ecology (Hollingshead), **10**: 354-366; to human welfare (Shantz), **10**: 311-342.
- indicators, see *Indicators*.
- life of Cuba (Seifrizz), **13**: 375-426, 64 fig.
- of Beaufort sand beaches (Humm), **12**: 164-174, 1 fig.
- of *Prairie*, see *Prairie*.
- relation to grasshoppers (Isely), **8**: 551-604.
- succession, see *Succession*.
- Plateau, Allegheny, see *Allegheny*; *Berkshire*, see *Massachusetts*; *Wasatch*, see *Utah*.
- Plethodontid salamanders, see *Amphibia*.
- Pleurocera*, see *Snails*.
- Poa*, see also *Grasses*; *Grassland*; *Prairie*.
- pratensis*, role in grassland succession (Weaver and Bruner), **15**: 297-319.
- secunda* (Daubenmire), **12**: 53-79.
- Pollen profiles, post-glacial history of Lake Forest region (Patzger), **16**: 231-232.
- spectrum studies on the Anoka Sand Plain in Minnesota (Artist), **9**: 493-535, 16 fig.
- Pollution, relation, to distribution of Protozoa (Lackey), **8**: 501-527.
- [Pollution] [relation]
- to plankton population of upper Mississippi River (Reinhard), **1**: 395-464.
- Pond, Linsley, see *Connecticut lakes*.
- Pools, biotic communities, Manitoba (McClure), **13**: 1-35.
- Population(s), see also *Animals*; *Communities*; *Life histories*.
- and home range relationships of the box turtle, *Terrapene c. carolina* (Linnaeus), (Stickel), **20**: 351-378, 15 fig.
- aquatic, symposium (Park *et al.*), **16**: 311-391.
- as sphere of regional planning (Mackaye), **10**: 349-353.
- ecology, history and scope, symposium paper (Park), **16**: 313-320.
- of insects, symposium (Chapman *et al.*), **9**: 259-320.
- of rodents in Sierra Nevada (Storer *et al.*), **14**: 165-192.
- of social insects, symposium paper (Emerson), **9**: 287-300, 1 fig.
- studies of soil insects, symposium paper (King), **9**: 270-286.
- Populus*, see *Aspen*.
- Porifera, see *Invertebrates*; *Sponges*.
- Postclimax grassland, recovery from drought (Weaver and Albertson), **14**: 393-479.
- Postglacial climatic variation, in Kashmir and Indian Tibet (Hutchinson), **9**: 145-182.
- in Minnesota (Artist), **9**: 493-535.
- history of Lake Forest formation (Patzger), **16**: 211-250.
- migration of plants into northwestern Wisconsin (McLaughlin), **2**: 335-383.
- of snails of Tippecanoe River system (Wright), **2**: 233-259.
- Post-Pleistocene climate of Alaska (Cooper), **12**: 1-22.
- Potamogeton, relation to Chironomidae (Berg), **20**: 83-101.
- Patzger, J. E. Phytosociology of the primeval forest in central-northern Wisconsin and upper Michigan, and a brief post-glacial history of the Lake Forest formation, **16**: 211-250, 31 fig.
- Powell, Thomas E., Jr. An ecological study of the tobacco beetle *Lasioderma serricorne* Fabr., with special reference to its life history and control, **1**: 333-393, 20 fig.; correction, **2**: 384.
- Powers, Edwin B., Florian G. Hopkins, Thressa A. Hickman and Lula Mae Shipe. The relation of respiration of fishes to environment, **2**: 385-473, 28 fig.
- Prairie*, see also *Grassland*.
- (Weaver and Fitzpatrick), **4**: 109-295, 121 fig.
- climax on sand-hills in northeastern Colorado (Ramaley), **9**: 1-51.
- effect of, drought (Albertson and Weaver), **12**: 23-51; (Robertson), **9**: 431-492; (Weaver and Albertson), **13**: 63-117.
- drought and dust (Albertson and Weaver), **16**: 449-463.
- drought, dust and grazing (Albertson and Weaver), **14**: 1-29.
- forest ecotone, see *Ecotone*.
- grasses, see also *Grasses*.
- effect of soil type on root systems (Weaver and Darland), **19**: 303-338.
- interception of rainfall (Clark), **10**: 243-277.
- seed production (Cornelius), **20**: 1-29.
- in Canada (Coupland), **20**: 271-315.
- in Colorado and Wyoming (Costello), **14**: 107-134.

- in Fort Worth region, Texas (Dyksterhuis), **16**: 1-29.
 in Kansas (Albertson), **7**: 481-547.
 in Nebraska sand-hill region (Tolstead), **12**: 270-288.
 in Okefinokee Swamp (Wright and Wright), **2**: 121-128.
 in Oklahoma (Bruner), **1**: 99-188.
 in Washington and Idaho (Daubenmire), **12**: 53-79.
 in Wisconsin (Marks), **12**: 120; (Thomson), **10**: 685-717.
 injury of trees by drought (Albertson and Weaver), **15**: 393-434.
 major grassland types in western North Dakota (Hanson and Whitman), **8**: 57-114.
 peninsula, see *Prairie in Wisconsin*.
 plants, rhizomes (Mueller), **11**: 165-188.
 recovery from drought (Weaver and Albertson), **14**: 393-479.
 stabilization after drought (Weaver), **20**: 251-270.
 succession after drought (Weaver and Bruner), **15**: 297-319.
 viability and germination of seeds and early life history of plants (Blake), **5**: 405-460.
Prairies and pastures of the dissected loess plains of central Nebraska (Weaver and Bruner), **18**: 507-549, 60 fig.
Precipitation, see also *Rain*; *Water*; *Infiltration*; *Weather*.
 effect on, annual rings of trees (Schumacher and Day), **9**: 387-429.
 ant activity (Weber), **5**: 165-206.
 growth of pine (Coile), **6**: 533-562.
 in mountains of western United States (Baker), **14**: 223-254.
 interception by plants (Clark), **10**: 243-277.
 relation to, distribution of Cladocera and Copepoda (Carl), **10**: 55-110.
 fish abundance in Lake Erie (Doan), **12**: 297, 306-307.
 osmotic value of cell sap of *Larrea* (Mallery), **5**: 1-35.
 vegetation of Hawaii (Egler), **17**: 395.
 role in life of birds (Kendeigh), **4**: 299-417.
Predators, see also *Life histories*, especially bobwhite, craneflies, desert tortoise, oysters, slider turtle.
Asio o. otus (Tinbergen), **3**: 443-492.
 dragonfly-eating birds (Kennedy), **20**: 103-142.
 of vertebrates on a Michigan farm (Allen), **8**: 347-436.
 relation to biological control of insects (Smith), **9**: 311-320.
Presence (Cain), **2**: 494.
Present trends in the investigation of the relations of marine organisms to their environment, symposium paper (Vaughan), **4**: 501-522.
 Preston, Richard J., Jr. The growth and development of the root systems of juvenile lodgepole pine, **12**: 449-468, 16 fig.
Prey, see *Predators*.
Primary succession on volcanic deposits in southern Idaho (Egler), **11**: 277-298, 22 fig.
 Prince William Sound, see *Alaska*.
Principles of competition as illustrated by Sudan grass, Holcus sorghum sudanensis (Piper) Hitch. (de Peralta), **5**: 355-404, 16 fig.
Problems of oceanic geochemistry, symposium paper (Hutchinson), **17**: 299-307, 3 fig.
Procyon, see *Raccoons*.
Production and utilization of fish populations, symposium paper (Ricker), **16**: 373-391.
 [Production]
 dynamics in marine area (Clarke), **16**: 321-335.
 in aquatic populations, symposium (Park et al.), **16**: 311-391.
 of phytoplankton, effect of limnological and meteorological conditions (Chandler and Weeks), **15**: 435-457.
Productivity, biological, mathematical formulation (Clarke et al.), **16**: 336-337.
 ducks, see *Nyroca*.
 grassland after drought (Weaver and Albertson), **13**: 63-117; (Weaver and Bruner), **15**: 297-319.
 effect of drought, dust and grazing (Albertson and Weaver), **14**: 1-29.
 lake bottom (Deevey), **11**: 413-455.
 Linsley Pond, Connecticut (Riley), **10**: 299-303.
 ocean (Herrington), **17**: 317-323; (Hutchinson), **17**: 299-307.
 reservoir lakes, in Colorado (Pennak), **10**: 263-264; in Texas (Harris and Silvey), **10**: 111-143.
 ring-necked pheasant (Baskett), **17**: 1-30.
 Sodon Lake, Michigan (Newcombe and Slater), **20**: 207-227.
 Sudan grass (de Peralta), **5**: 355-404.
 Texas prairie (Dyksterhuis), **16**: 24-26.
 Profiles, see *Pollen*.
Profundal, see *Bottom*.
Propagation, see *Reproduction*.
Prosopis, see *Mesquite*.
Protective coloration (Roberts), **12**: 389.
 in mammals (Hardy), **15**: 104-105.
 in sand beach animals (Pearse et al.), **12**: 149.
Protozoa, see also *Invertebrates*; *Plankton*; *Adelina*.
 factors affecting distribution (Lackey), **8**: 501-527.
 Prytherch, Herbert F. The role of copper in the setting, metamorphosis, and distribution of the American oyster, *Ostrea virginica*, **4**: 47-107, 16 fig.
Pseudemys scripta troostii, life history (Cagle), **20**: 31-54.
Pseudotsuga taxifolia, distribution and asymmetry in Columbia River gorge (Lawrence), **9**: 217-257.
Ptygura longicornis (Edmondson), **15**: 141-172.
 Puerto Rico, *Ostrea rhizophorae* (Mottox) **19**: 339-356.
 Puget Sound, see *Washington*.
 Purer, Edith A. Plant ecology of the coastal salt marshlands of San Diego County, California, **12**: 81-111, 16 fig.
 Studies of certain coastal sand dune plants of southern California, **5**: 1-87, 29 fig.
P-Z ratio (Riley), **10**: 279-306.
 Quail, see *Colinus*.
Quantitative study of grassland succession (Weaver and Bruner), **15**: 297-319.
 of true-prairie vegetation after three years of extreme drought (Robertson), **9**: 431-492, 32 fig.
Quantity and composition of the bottom fauna of thirty-six Connecticut and New York lakes (Deevey), **11**: 413-455, 45 fig.
 Quebec, forest-tundra ecotone on east coast of Hudson Bay (Marr), **10**: 117-144.
 Gaspé, migration of red-breasted nuthatches (Ball), **17**: 501-533.
Quercus, see also *Oak*.
 . *alba*, effect of precipitation on annual rings (Schumacher and Day), **9**: 387-429.

- [*Quercus*]
catesbaei, relation to succession on North Carolina coastal plain sands (Wells and Shunk), **1**: 465-520.
umosa in chapparral (Bauer), **6**: 409-454.
montana, importance in forests of Black Mountain, Kentucky (Braun), **10**: 193-241.
palustris in deciduous forest (Braun), **6**: 89-149.
spp., in pollen profiles of Minnesota bogs (Artist), **9**: 493-535.
in Wisconsin (Marks), **12**: 113-133.
- Rabbit, cottontail, on Michigan farm (Allen), **8**: 347-436.
parasites (Harkema), **6**: 151-232.
- Raccoons: their habits and management in Michigan (Stuewer), **13**: 203-257, 55 fig.
- Radial growth of pine, effect of rainfall and temperature (Coile), **6**: 533-562.
- Radiant energy, see Light.
- Rainfall, see also Precipitation.
- Rain forests, Tobago, British West Indies (Beard), **14**: 135-163.
shadow, effect on mountain climate (Baker), **14**: 223-254.
effect on the plant formations of Guadalupe (Pendleton), **19**: 75-93, 12 fig.
- Ramaley, Francis. Sand-hill vegetation of northeastern Colorado, **9**: 1-51, 21 fig.
- Range, see also Behavior; Prairie.
depleted subalpine, revegetation (Ellison), **19**: 95-121.
of marine animals, Santa Cruz Island, California (Hewatt), **16**: 185-208.
- Rankin, John S. An ecological study of parasites of some North Carolina salamanders, **7**: 169-269, 15 fig.
coauthor, see Pearse, A. S.
- Rasmussen, D. Irvin. Biotic communities of Kaibab Plateau, Arizona, **11**: 229-275, 20 fig.
coauthor, see Shelford, V. E.
- Rats, see Muskrat; *Rattus*.
- Rattus exulans* and *R. mindanensis*, populations on Guam (Baker), **16**: 393-408.
- mindanensis*, host of *Ascoschöngastia indica* (Wharton), **16**: 151-184.
norvegicus, parasites (Harkema), **6**: 151-232.
- Raunkiaer's leaf size classes (Cain), **2**: 502.
life-forms, see Life-forms.
- Raup, Hugh M. Some natural floristic areas in boreal America, symposium paper, **17**: 221-234, 8 fig.
- Reactions of adapted legumes and grasses on the structural condition of eroded Lindley-Weller soils in southeastern Iowa (Ward), **19**: 145-171, 18 fig.
- Reconnaissance, ecological, in Medicine Bow Mountains (Blake), **15**: 207-242.
- Recovery, see also Revegetation.
of grassland from drought (Weaver), **20**: 251-270; (Weaver and Albertson), **14**: 393-479; (Weaver and Bruner), **15**: 297-319.
of trees in prairie climate after drought injury (Albertson and Weaver), **15**: 393-434.
- Red fir forest of the Sierra Nevada: *Abietum magnificae* (Oosting and Billings), **13**: 259-274, 5 fig.
fox, see *Vulpes*.
- Redfield, Alfred C. Introduction to symposium on Marine ecology, **17**: 297.
- Redhead, see *Nyroca*.
- Reduction of ungrazed mixed prairie to short grass as a result of drought and dust (Albertson and Weaver), **16**: 449-463, 17 fig.
- Reforestation, see Reproduction; Revegetation.
- Regeneration, see also Revegetation.
of tortoise shell after injury (Woodbury and Hardy), **18**: 145-200.
- Regional planning and ecology, symposium paper (MacKaye), **10**: 349-353.
- Regulators of community activity for crayfish (Roberts), **14**: 359-392.
- Reinhard, Edward George. The plankton ecology of the upper Mississippi, Minneapolis to Winona, **1**: 395-464, 11 fig.
- Relation of, American dragonfly-eating birds to their prey (Kennedy), **20**: 103-142.
ecology to human welfare—the human situation, symposium (Adams *et al.*), **10**: 307-372.
geography to human ecology, symposium paper (Thornthwaite), **10**: 343-348.
plant ecology to human welfare, symposium paper (Shantz), **10**: 311-342, 25 fig.
respiration of fishes to environment (Powers *et al.*), **2**: 385-473, 28 fig.
- Relations between the moon and periodicity in the breeding of marine animals (Korringa), **17**: 347-381, 5 fig.
of Texas Acrididae to plants and soils (Isely), **8**: 551-604, 7 fig.
- Relic colonies in primeval forest in Wisconsin and Michigan (Pötzger), **16**: 211-250.
prairie areas in central Wisconsin (Thomson), **10**: 685-717, 25 fig.
- Relict species in vegetation of Cuba (Carabia), **15**: 321-341.
- Reproduction, see also Life histories; Behavior; Revegetation.
in the western mosquitofish *Gambusia affinis affinis* (Baird and Girard), and its use in mosquito control (Krumholz), **18**: 1-43, 16 fig.
planktonic Crustacea on Georges Bank (Whiteley), **18**: 233-264.
ponderosa pine, effect of herbaceous vegetation (Pearson), **12**: 315-338.
sessile marine invertebrates (McDougall), **13**: 321-374.
trees in grazed and ungrazed woodland (Dambach), **14**: 255-270.
- Reproductive behavior of animals (Roberts), **12**: 350, 362-363.
periodicity of marine animals, relation to moon (Korringa), **17**: 347-381.
potential, differential effect of environmental factors on, in *Microbracon hebetor* and host, *Ephestia kuehniella* (Payne), **4**: 1-46.
- Reptiles, see Animals; *Anniella*; *Gopherus*; *Pseudemys*; *Storeria*; *Terrapene*; *Uma*.
- Researches concerning Texas Tettigoniidae (Isely), **11**: 457-475, 5 fig.
- Reservoir lakes of Colorado (Pennak), **19**: 233-267; of Texas (Harris and Silvey), **10**: 111-143.
- Respiration, adaptations in animals of marine sandy beaches (Pearse *et al.*), **12**: 155.
of animals (Roberts), **12**: 343, 344, 362.
of fish, relation to environment (Powers *et al.*), **2**: 385-473.
- Response of certain legumes to variations in soil and microclimate on eroded areas in southeastern Iowa (Brewer), **17**: 471-500, 21 fig.

- Resurvey of grasses, forbs, and underground plant parts at the end of the great drought (Weaver and Albertson), **13**: 63-117, 70 fig.
- Retrogression in sand-hills vegetation in Nebraska (Tolstead), **12**: 273-281, 285-288.
- Revegetation, see also Recovery; Reproduction.
 abandoned fields (Billings), **8**: 437-499; (Keever), **20**: 229-250; (Minckler), **16**: 87-108; (Smith), **10**: 421-484.
 forest, effect of black-tailed deer (Cowan), **15**: 109-139; factors influencing, in northern Wisconsin (Stoeckeler and Limstrom), **12**: 191-212; growth of longleaf pine seedlings (Pessin), **8**: 115-149.
 overgrazed range on Wasatch Plateau (Ellison), **19**: 95-121.
- Rhizobium radicicola* in root nodules of *Robinia pseudoacacia* (Chapman), **5**: 37-60.
- Rhizomes of prairie plants (Mueller), **11**: 165-188.
- Rhizophora mangle*, and other mangroves, on Bimini Islands (Howard), **20**: 317-349.
 relation to *Ostrea rhizophorae* (Mattox), **19**: 339-356.
- Rhode Island, original forest types (Bromley), **5**: 61-89.
- Rhythm, see Periodicity; Annual; Diurnal; Seasonal.
- Rice, Lucile A., coauthor, see Shelford, V. E.
- Ricker, William E. Production and utilization of fish populations, symposium paper, **16**: 373-391.
 coauthor, see Clarke, George L.
- Riley, Gordon A. Limnological studies in Connecticut, **9**: 53-94, 15 fig.; Part III. The plankton of Linsley Pond, **10**: 279-306, 8 fig.
- Rings, growth, see Annual growth.
- River, see also Stream; Mississippi.
 Canadian, see Oklahoma.
 Columbia, see Oregon.
 discharge in Lake Erie, effect on water and phytoplankton (Chandler and Weeks), **15**: 435-457.
 system as sphere of regional planning (Mackaye), **10**: 349-353.
 Tippecanoe, see Indiana.
- Roan Mountain, see North Carolina, vegetation.
- Roberts, Tilden W. Behavior of organisms, **12**: 339-412, 15 fig.
 Light, eyestalk chemical, and certain other factors as regulators of community activity for the crayfish, *Cambarus virilis* Hagen, **14**: 359-392, 21 fig.
- Robertson, J. H. A quantitative study of true-prairie vegetation after three years of extreme drought, **9**: 431-492, 32 fig.
- Robinia pseudoacacia*, effect on growth of associated species (Chapman), **5**: 37-60.
- Robinson, Rex J., coauthor, see Scheffer, Victor B.
- Rock, vegetation on, in Bimini Islands (Howard), **20**: 317-349; in Cuba (Seifriz), **13**: 387-388, 393-396; in Idaho on basalt (Eggler), **11**: 277-298; in southeastern United States on granite (McVaugh), **13**: 119-165.
- Rocky Mountains, see also Medicine Bow; Uinta.
 alpine vegetation on James Peak, Colorado (Cox), **3**: 299-372.
 climate, see Mountains.
 National Park, root habits of plants (Holch et al.), **11**: 327-345.
 Pike's Peak vegetation (Whitfield), **3**: 75-105.
- Rodent(s), see also Animals; Mammals; Muskrat; *Sciurus*.
 [Rodent(s)]
 destruction of forest seeds by (Stoeckeler and Limstrom), **12**: 209-210.
 factors in old field reforestation (Minckler), **16**: 87-108.
 parasites, Guam (Wharton), **16**: 151-184; North Carolina (Harkema), **6**: 151-232.
 populations in the Sierra Nevada of California (Storer et al.), **14**: 165-192, 18 fig.
 on Guam, Mariana Islands (Baker), **16**: 393-408.
- Roe, Eugene I., coauthor, see Krefting, Lauritz W.
- Rogers, J. Speed. The ecological distribution of the crane-flies of northern Florida, **3**: 1-74, 25 fig.
- Role of, copper in the setting, metamorphosis, and distribution of the American oyster, *Ostrea virginica* (Prytherch), **4**: 47-107, 16 fig.
 environment in the life of birds (Kendeigh) **4**: 299-417, 27 fig.
 intraspecific competition and other factors in determining the population level of a major marine species. symposium paper (Herrington), **17**: 317-323, 5 fig.
 some birds and mammals in seed germination (Krefting and Roe), **19**: 269-286.
 the sense organs in aggregations of *Ameiurus melas* (Bowen), **1**: 1-35, 1 fig.
- Root(s), decay, effect on succession (Keever), **20**: 229-250.
 development in *Pinus echinata* and associated species (Billings), **8**: 437-499.
 in three soil types (Duncan), **11**: 141-164.
 distribution, in coastal plain sands, relation to soil moisture and nutrients (Wells and Shunk), **1**: 465-520.
 relation to soils of Black Forest, Colorado (Livingston), **19**: 123-144.
 growth of Sudan grass (de Peralta), **5**: 355-404.
 habits of certain plants of the foothill and alpine belts of Rocky Mountain National Park (Holch et al.), **11**: 327-345, 12 fig.
 nodules of *Robinia pseudoacacia* (Chapman), **5**: 37-60.
Pinus palustris seedlings (Pessin), **8**: 115-149.
 prairie plants (Albertson), **7**: 481-547; (Blake), **5**: 443-445; (Weaver and Bruner), **18**: 507-549; effect of drought (Weaver and Albertson), **13**: 63-117; layering (Weaver and Fitzpatrick), **4**: 121-124.
 -shoot ratio, Piedmont forest (Kozlowski), **19**: 207-231.
 -soil relationships of native grasses (Weaver and Darland), **19**: 303-338.
 system of, lodgepole pine (Preston), **12**: 449-468.
 sand-hill plants (Tolstead), **12**: 272-287.
 trees in prairie climate, relation to drought resistance (Albertson and Weaver), **15**: 393-434.
- Rotatoria, see also Rotifera.
 in sand of Wisconsin lake beaches (Pennak), **10**: 537-615.
 sessile, factors affecting distribution (Edmondson), **14**: 31-66.
 population dynamics and social structures (Edmondson), **15**: 141-172.
- Rotifera, see also Plankton; Rotatoria.
 population dynamics (Edmondson), **16**: 357-372.
 vertical distribution in Douglas Lake (Campbell), **11**: 1-19.

- Routes of plant migration, tertiary centers (Chaney), **17**: 139-148.
- Russell, Carl Parcher. Seasonal migration of mule deer, **2**: 1-46, 5 fig.
- Sagebrush, see *Artemisia*.
- Sagittaria*, see Bogs; Marshes; Swamps.
- Sailer, R. I., coauthor, see Hoffmann, C. H.
- Salamanders, see Amphibia.
- Salicornia pacifica*, ecology and anatomy (Purer), **12**: 96-99.
- Salientia, see Amphibia.
- Salinity, effect on, distribution of *Ceratium* in ocean (Graham), **11**: 99-116.
- dragonflies (Wright), **13**: 481-497.
- Louisiana marshland plants (Penfound and Hathaway), **8**: 1-56.
- oyster (Mattox), **19**: 346-348; (Prytherch), **4**: 47-107.
- oyster "leech" (Pearse and Wharton), **8**: 605-655.
- sessile marine invertebrates (McDougall), **13**: 321-374.
- water hyacinth (Penfound and Earle), **18**: 447-472.
- of water and soil in salt marshes (Purer), **12**: 88.
- Salt, see Salinity.
- Saltbush, see *Atriplex*.
- Saltmarshes, see Marshes, salt.
- Salvia mellifera* in chaparral (Bauer), **6**: 409-454.
- San Diego County, see California.
- San Juan Islands, see Washington.
- Sand, see also Texas, Carrizo sands.
- barrens of northwestern Wisconsin, Atlantic coastal plain plants in (McLaughlin), **2**: 335-383.
- beaches at Beaufort, North Carolina, plant and animal life in (Pearse et al.), **12**: 135-190.
- of Wisconsin lakes as habitats for Metazoa (Penak), **10**: 537-615.
- dunes, on floodplain of Canadian River (Hefley), **7**: 345-402.
- vegetation, in Canada (Coupland), **20**: 271-315; in Oklahoma (Bruner), **1**: 99-188; in southern California (Purer), **6**: 1-87.
- habitat of lizard *Uma* (Stebbins), **14**: 311-332.
- hills vegetation, in Nebraska (Tolstead), **12**: 255-292; in northeastern Colorado (Ramaley), **9**: 1-51, 21 fig.
- in soil, of Wisconsin prairies (Thomson), **10**: 685-717.
- of North Carolina coastal plain, vegetation and habitat factors (Wells and Shunk), **1**: 465-520.
- plain, Anoka, pollen spectrum studies (Artist), **9**: 493-535.
- Santa Cruz Island, see California.
- Santa Marta Mountains, see Colombia.
- Santa Monica Mountains, see California.
- Sarcobatus*, see Greasewood.
- Sargassum*, on beaches at Beaufort, North Carolina (Humm), **12**: 172.
- Saskatchewan, mixed prairie (Coupland), **20**: 271-315.
- Sauk County, see Wisconsin.
- Savanna associations of Cuba (Siefritz), **13**: 375-426.
- Savannah, oak-hickory, Oklahoma (Bruner), **1**: 99-188.
- Savely, Harvey Epperson, Jr. Ecological relations of certain animals in dead pine and oak logs, **9**: 321-385, 8 fig.
- Scats, see Dung.
- Scheffer, Victor B. and Rex J. Robinson. A limnological study of Lake Washington, **9**: 95-143, 36 fig.
- Schmitt, Waldo L. A collection of shrimps from Santa Cruz Island, California, **16**: 208-210.
- Schumacher, Francis X. and Besse B. Day. The influence of precipitation upon the width of annual rings of certain timber trees, **9**: 387-429, 16 fig.
- Science and philosophy (Lindeman), **10**: 367-372.
- Scirpus*, see Bogs; Marshes; Swamps.
- Sciurus niger rufiventer* (Allen), **8**: 347-436; (Hicks), **19**: 287-302.
- Sclerophyll shrubs in chaparral (Bauer), **6**: 409-454.
- Scope of population ecology (Park), **16**: 313-320.
- Scott, Thomas G. Some food coactions of the northern plains red fox, **13**: 427-479, 32 fig.
- Sea, see Ocean.
- Seasonal, see also Annual; Periodicity; Phenological.
- activity, see also Life histories.
- of western fox squirrel (Hicks), **19**: 287-302.
- aspects, see Aspection.
- change in animal environment and populations on Michigan farm (Allen), **8**: 347-436.
- cycles of *Passalus cornutus* (Pearse et al.), **6**: 455-490.
- distribution of, benthic fauna (Moore), **9**: 568-572.
- cryptozoa in woodland (Cole), **16**: 49-86.
- microfauna of Duke Forest (Pearse), **16**: 127-150.
- plankton of upper Mississippi River (Reinhard), **1**: 395-464.
- Protozoa (Lackey), **8**: 501-527.
- migration of, animals in deciduous forest (Adams), **11**: 189-227.
- mule deer (Russell), **2**: 1-46, 5 fig.
- relations of insects in cattle droppings (Mohr), **13**: 275-298.
- of root growth in *Pinus contorta* var. *latifolia* (Preston), **12**: 463-464.
- on marine sand beaches (Pearse et al.), **12**: 156-157.
- succession, soil relations, numbers, and regional distribution of northeastern Texas acridians (Isely), **7**: 317-344, 6 fig.
- variability, effect on invertebrates (Davidson), **2**: 305-333.
- variations in, abundance of certain estuarine and marine fishes in Louisiana, with particular reference to life histories (Gunter), **8**: 313-346, 16 fig.
- daylight intensity (Park), **1**: 189-230.
- fresh-water plankton populations (Pennak), **16**: 342-345.
- germination of prairie seeds (Blake), **5**: 405-460.
- lake bottom fauna (Deevey), **11**: 413-455; (Eggleton), **1**: 231-331.
- parasites, of fish and amphibians (Holl), **2**: 83-107; of frogs and toads (Brandt), **6**: 491-532; of rodents (Harkema), **6**: 151-232.
- plankton of Georges Bank (Whiteley), **18**: 233-264.
- rotifer populations (Edmondson), **16**: 364-366.
- vertical distribution of plankton Rotifera (Campbell), **11**: 1-19.
- Sedges, see Bogs; Marshes; Swamps; Prairie.
- Sediment, see also Physical factors.
- effect on plankton in streams (Chandler), **7**: 445-479.
- from land, effect on marine organisms (Nelson), **17**: 337-346.
- relation to sessile marine invertebrates (McDougall), **13**: 321-374.

- Seed germination, and dormancy, relation to succession on old fields (Keever), **20**: 229-250.
 effect of charcoal in forest soil (Tryon), **10**: 104-106.
 role of birds and mammals (Krefting and Roe), **19**: 269-286.
 to test site factors (Larsen), **10**: 1-54.
 production of native grasses under cultivation in eastern Kansas (Cornelius), **20**: 1-29, 8 fig.
 viability and germination in prairie (Blake), **5**: 405-460.
- Seedling, conifers, water relations (Marshall), **1**: 37-98.
 development in three types of soil (Duncan), **11**: 141-164.
 of Sudan grass (de Peralta), **5**: 355-404.
 growth, longleaf pine (Pessin), **8**: 115-149.
 pine and oak, effect of light and moisture (Kozlowski), **19**: 207-231.
 survival, in forests of northern Wisconsin (Stoeckeler and Limstrom), **12**: 191-212.
 in grazed and ungrazed woodland (Dambach), **14**: 255-270.
 indicator of site factors (Larsen), **10**: 1-54.
 ponderosa pine, effect of herbaceous vegetation (Pearson), **12**: 315-338.
 white pine, in New England (Smith), **10**: 373-420.
- Seifriz, William. The plant life of Cuba, **13**: 375-426, 64 fig.
- Sense organs, adaptation in sandy beach animals (Pearse *et al.*), **12**: 149.
 relation to aggregation behavior of snakes (Noble and Clausen), **6**: 269-316.
 role in aggregations of catfish (Bowen), **1**: 1-35.
- Sessile marine invertebrates of Beaufort, North Carolina (McDougall), **13**: 321-374, 19 fig.
- Rotatoria (Edmondson), **14**: 31-66; **15**: 141-172.
- Seston, annual cycles in Colorado lakes (Pennak), **19**: 247-249.
- Setting of oyster, role of copper (Prytherch), **4**: 47-107.
 of sessile marine invertebrates (McDougall), **13**: 321-374.
- Seven-year quantitative study of succession in grassland (Weaver and Bruner), **15**: 297-319, 17 fig.
- Sewage, see Pollution.
- Shade, see Light.
- Shadscale, see *Atriplex*.
- Shantz, H. L. The relation of plant ecology to human welfare, symposium paper, **10**: 311-342, 25 fig.
- Shaver, Jesse M. The influence of climatic and weather factors upon the numbers of birds on a depositing creek bank, **3**: 535-597, 25 fig.
- Shelford, V. E. Faith in the results of controlled laboratory experiments as applied in nature, symposium paper, **4**: 491-498.
- A. O. Weese, Lucile A. Rice, D. I. Rasmussen, Archie MacLean and H. C. Markus. Some marine biotic communities of the Pacific coast of North America. Part I. General survey of the communities, **5**: 249-332, 10 fig.
- Shells, of snail *Busycon* spp. (Magalhaes), **18**: 377-409.
- Shipe, Lula Mae, coauthor, see Powers, Edwin B.
- Short-grass, see Prairie.
- Shrimps of Santa Cruz Island, California (Schmitt), **16**: 208-210.
- Shrub(s), see also Mesquite; Chaparral; *Artemisia*.
 communities of bogs (Gates), **12**: 238, 241.
 desert, in western Utah, biotic communities (Fautin), **16**: 251-310.
- [Shrub(s)]
 effect of drought (Albertson and Weaver), **15**: 393-434.
 of dissected loess plains of central Nebraska (Weaver and Bruner), **18**: 507-549.
- Shunk, I. V., coauthor, see Wells, B. W.
- Sierra de Nipe, see Cuba.
- Sierra Nevada, see California.
- Silica in lakes, see Chemical factors.
- Siluroid fish, see *Ameiurus*.
- Silvey, J. K. Gwynn, coauthor, see Harris, Benjamin B.
- Silvies of forests of Allegheny Plateau (Hough and Forbes), **13**: 299-320.
- Site factor variations and responses in temporary forest types in northern Idaho (Larsen), **10**: 1-54, 15 fig.
- Sitta canadensis*, see Nuthatches.
- Skunk, eastern, on Michigan farm (Allen), **8**: 347-436.
 prairie spotted (Crabb), **18**: 201-232.
- Slater, John V., coauthor, see Newcombe, Curtis L.
- Slider turtle, see *Pseudemys*.
- Slope, as factor in temporary forest types (Larsen), **10**: 1-54.
 influence on forest composition (Braun), **10**: 193-241.
- Slough grass, see *Spartina*.
- Smell, relationship to aggregating behavior in catfish (Bowen), **1**: 1-35.
- Smith, Charles Clinton. Biotic and physiographic succession on abandoned eroded farmland, **10**: 421-484, 1 fig.
- Smith, F. G. Walton, coauthor, see Gunter, Gordon.
- Smith, Harry S. Insect populations in relation to biological control, symposium paper, **9**: 311-320, 1 fig.
- Smith, Lloyd F. Factors controlling the early development and survival of eastern white pine (*Pinus strobus* L.) in central New England, **10**: 373-420, 8 fig.
- Snails, *Busycon* spp. at Beaufort, North Carolina (Magalhaes), **18**: 377-409.
 distribution and post-glacial migration in Tippecanoe River system (Wright), **2**: 233-259.
- Snake River plains, see Idaho.
- Snakes, behavior, especially *Storeria dekayi* (Noble and Clausen), **6**: 269-316.
- Snow, effect on fish winter-kill (Greenbank), **15**: 343-392.
- Sociability (Cain), **2**: 489.
- Social behavior in biotic communities of the Wasatch chaparral (Hayward), **18**: 473-506.
 insects (Emerson), **9**: 287-300.
 structures of sessile Rotatoria (Edmondson), **15**: 141-172.
- Society and human ecology (Hollingshead), **10**: 354-366.
- Sociology of deciduous forest (Daubenmire), **6**: 233-268.
- Sod, relation to germination and life history of prairie plants (Blake), **5**: 405-460.
- Sodium arsenite, use in mesquite eradication (Fisher *et al.*), **16**: 109-126.
- Sodon Lake, see Michigan.
- Soil, see also Basalt; Loess; Peat; Volcanic; Sand; Rock.
 as factor in temporary forest types (Larsen), **10**: 1-54.
 changes in transition from forest to pasture (Stewart), **3**: 107-145.
 conservation, relation to human ecology (Thornthwaite), **10**: 343-348.
- Conservation Service, in southwestern Wisconsin (Marks), **12**: 128-130.

[Soil]

- effect on distribution of mammals in southwestern Utah (Hardy), **15**: 71-108.
 inhabited by limbless lizards (Miller), **14**: 285-286.
 insects (King), **9**: 270-286.
 litter, effect on microfauna of Duke Forest (Pearse), **16**: 127-150.
 in grazed and ungrazed woodland (Dambach), **14**: 255-270.
 relation to germination and survival of white pine (Smith), **10**: 373-420.
 moisture and salt content, relation to osmotic value of *Larrea* plant cell sap (Mallery), **5**: 1-35.
 effect of herb-layer vegetation on (Pearson), **12**: 331.
 effect on action of oils and chemicals in mesquite eradication (Fisher *et al.*), **16**: 109-126; on cryptozoa (Cole), **16**: 49-86.
 in chaparral (Bauer), **6**: 409-454.
 in prairie (Albertson and Weaver), **12**: 31-32; (Robertson), **9**: 431-491; (Weaver), **20**: 251-270; (Weaver and Albertson), **13**: 63-117; (Weaver and Bruner), **15**: 297-319; effect on tree growth (Albertson and Weaver), **15**: 393-434; relation to seed germination (Blake), **5**: 405-460.
 in sand-hills (Tolstead), **12**: 259-263.
 relation, to forest seedling survival (Stoeckeler and Limstrom), **12**: 196-209; to growth and competition of Piedmont trees (Kozlowski), **19**: 207-231; to growth of longleaf pine seedlings (Pessin), **8**: 115-149; to root development (Duncan), **11**: 141-164; to Sudan grass development (de Peralta), **5**: 355-404; to wilting of conifer seedlings (Marshall), **1**: 37-98.
 nitrogen content in plantations of *Robinia pseudo-acacia* (Chapman), **5**: 37-60.
 of abandoned farmlands of Oklahoma (Smith), **10**: 421-484.
 of Black Forest region, Colorado (Livingston), **19**: 123-144.
 of forest, effect of charcoal (Tryon), **10**: 81-115.
 of North Carolina coastal plain, relation to vegetation (Wells and Shunk), **1**: 465-520.
 of Oklahoma, relation to plant associations (Bruner), **1**: 99-188.
 of Pike's Peak region (Whitfield), **3**: 75-105.
 of prairie (Albertson), **7**: 481-547; (Coupland), **20**: 271-315; (Hanson and Whitman), **8**: 57-114; (Heady), **20**: 55-81; (Robertson), **9**: 431-491; (Thomson), **10**: 685-717; (Weaver and Fitzpatrick), **4**: 109-295.
 of sand-hills of northeastern Colorado (Ramaley), **9**: 1-51.
 of shortleaf pine stands on abandoned fields in North Carolina (Billings), **8**: 437-499.
 of Sierra de Nipe, Cuba (Carabia), **15**: 321-341.
 of Wasatch, chaparral (Hayward), **18**: 473-506.
 Plateau, relation to revegetation of overgrazed range (Ellison), **19**: 95-121.
 of Western Cross Timbers, Texas (Dyksterhuis), **10**: 325-376.
 relation to, aspen community of Minnesota and Wisconsin (Kittredge), **8**: 151-246.
 structure of "Big Woods" of Minnesota (Daubenmire), **6**: 233-268.
 Texas grasshoppers (Isely), **7**: 317-344; **8**: 551-604.

[Soil]

- response of legumes to variations in (Brewer), **17**: 471-500.
 root development in three types (Duncan), **11**: 141-164.
 -root relationships of certain native grasses in various soil types (Weaver and Darland), **19**: 303-338, 31 fig.
 structure, effect of legumes and grasses (Ward), **19**: 145-171.
 temperature, in relation to depth of water table (Stoeckeler and Limstrom), **12**: 206-207.
 Solar radiation, see Light.
 Solomon Islands, see Guadalupe.
 Sonoran Desert, plant distribution in relation to freezing weather (Turnage and Hinckley), **8**: 529-550.
 Soper, J. Dewey. History, range and home life of the northern bison, **11**: 347-412, 19 fig.
Sorghastrum, see Grassland; Prairie.
 South Carolina, plethodontid salamanders in Appalachians (Hairston), **19**: 47-73.
 vegetation on granitic flat-rocks (McVaugh), **13**: 119-165.
 South Dakota, injury of trees by drought (Albertson and Weaver), **15**: 393-434.
 prairie (Weaver and Fitzpatrick), **4**: 109-295.
 stabilization after drought (Weaver), **20**: 251-270.
 Sparrow, white-throated, analysis of repeat records (Borror), **18**: 411-430.
Spartina, see also Grassland; Prairie; Marshes.
leiantha, ecology and anatomy (Purer), **12**: 95-97.
michauxiana (Weaver and Fitzpatrick), **4**: 109-295.
 Spectrum, pollen, see Pollen.
Sphagnum in bogs of Michigan (Gates), **12**: 224, 238; of Minnesota (Conway), **19**: 196-198.
Spilogle interrupta, ecology and management in Iowa (Crabb), **10**: 201-232.
Spirodela polyrhiza, life history, with emphasis on turion phase (Jacobs), **17**: 437-469.
 Sponges of brackish water, including a new species (de Laubenfels), **17**: 31-47.
 of Wisconsin lakes (Jewell), **5**: 461-504.
Sporobolus, see also Grasses; Grassland; Prairie.
cryptandrus, role in grassland succession (Weaver and Bruner), **15**: 297-319.
 Sprouting, relation to eradication of mesquite (Fisher *et al.*), **16**: 109-126.
 Spruce, see also *Picea*.
 -fir forage type in Colorado and Wyoming (Costello), **14**: 117-118.
 forest arthropods (Fichter), **9**: 183-215.
 forest of southern New England (Bromley), **5**: 61-89.
 Squirrel, see *Sciurus*.
 ground, see *Citellus*.
 Stabilization of midwestern grassland (Weaver), **20**: 251-270, 16 fig.
 Stagnation in Connecticut lakes (Hutchinson), **11**: 21-60.
 Starling, James Holt. Ecological studies of the Pauro-poda of the Duke Forest, **14**: 291-310, 21 fig.
 Starvation, effect on Texas grasshoppers (Isely), **8**: 551-604.
 Stebbins, G. Ledyard, Jr. Evidence on rates of evolution from the distribution of existing and fossil plant species, symposium paper, **17**: 149-158, 4 fig.
 Stebbins, Robert C. Some aspects of the ecology of the iguanid genus *Uma*, **14**: 311-332, 22 fig.
 Steppes of North America, see Prairie.

- Stewart, Guy Robertson. A study of soil changes associated with the transition from fertile hardwood forest land to pasture types of decreasing fertility, **3**: 107-145, 5 fig.
- Stickel, Lucille F. Populations and home range relationships of the box turtle, *Terrapene c. carolina* (Linnaeus), **20**: 351-378, 15 fig.
- Stipa*, see also Grasses; Grassland; Prairie.
- leucotricha* in Fort Worth Prairie (Dyksterhuis), **16**: 1-29.
- spartea* (Weaver and Fitzpatrick), **4**: 109-295.
- Stoeckeler, Joseph H. and Gustaf A. Limstrom. Ecological factors influencing reforestation in northern Wisconsin, **12**: 191-212, 16 fig.
- Storage, effect on seeds of prairie plants (Blake), **5**: 405-460.
- Storer, Tracy L., Francis C. Evans and Fletcher G. Palmer. Some rodent populations in the Sierra Nevada of California, **14**: 165-192, 18 fig.
- Storeria dekayi*, behavior (Noble and Clausen), **6**: 269-316.
- Storm, see Wind; Physical factors.
- Stratification, see also Layering.
- concept (Cain), **2**: 492.
- diurnal and seasonal migration of the animals in a deciduous forest (Adams), **11**: 189-227, 16 fig.
- effect on seeds of prairie plants (Blake), **5**: 405-460.
- in Connecticut lakes (Hutchinson), **11**: 21-60.
- in reservoir lakes in Texas (Harris and Silvey), **10**: 111-143.
- of arthropods in spruce-fir forest (Fichter), **9**: 183-215.
- thermal and chemical, of lake water, relation to distribution of bottom fauna (Eggleton), **1**: 231-331.
- Stream drift carrying animals into lakes (Dendy), **14**: 333-357.
- Streams, fate of lake plankton in (Chandler), **7**: 445-479.
- Structure and development of old field shortleaf pine stands and certain associated physical properties of the soil (Billings), **8**: 437-499, 21 fig.
- of "Big Woods" of Minnesota (Daubennire), **8**: 233-268.
- Studies of certain coastal sand dune plants of southern California (Purer), **6**: 1-87, 29 fig.
- of the desert tortoise *Gopherus agassizii* (Woodbury and Hardy), **18**: 145-200, 25 fig.
- on bluebunch wheatgrass in Montana and height-weight relationships of certain range grasses (Heady), **20**: 55-81, 26 fig.
- on the biology of the edible oyster, *Ostrea rhizophorae* Guilding, in Puerto Rico (Mattox), **19**: 339-356, 14 fig.
- on the ecological relations of bees in the Chicago region (Pearson), **3**: 373-441, 1 fig.
- Study of, rodent populations on Guam, Mariana Islands (Baker), **16**: 393-408, 11 fig.
- root development in three soil types in the Duke Forest (Duncan), **11**: 141-164, 5 fig.
- soil changes associated with the transition from fertile hardwood forest land to pasture types of decreasing fertility (Stewart), **3**: 107-145, 5 fig.
- some ecologic factors affecting the distribution of Protozoa (Lackey), **8**: 501-527.
- the animal communities of a restricted area of soft [Study of]
- bottom in San Juan channel (Wismer and Swanson), **5**: 333-354, 5 fig.
- the cryptozoa of an Illinois woodland (Cole), **16**: 49-86, 8 fig.
- Stuewer, Frederick W. Raccoons: their habits and management in Michigan, **13**: 203-257, 55 fig.
- Stylocheus*, see Oyster "leech."
- Suaeda californica*, ecology and anatomy (Purer), **12**: 104-105.
- Subalpine forest arthropods (Fichter), **9**: 183-215.
- grassland (Costello), **14**: 107-134.
- range, revegetation (Ellison), **19**: 95-121.
- Submergence, adaptations to, of salt marsh plants (Purer), **12**: 81-111.
- Substrate of sessile Rotatoria (Edmondson), **14**: 31-66.
- Succession, abandoned fields, see Abandoned.
- alpine plant, on James Peak, Colorado (Cox), **3**: 299-372.
- beech-maple forest (Williams), **6**: 317-408.
- biotic, in Wasatch chaparral region (Hayward), **18**: 473-506; in Zion Canyon (Woodbury), **3**: 147-245.
- Coon Valley, Wisconsin, relation to land use (Marks), **12**: 113-133.
- deciduous forest, Illinois, effect of seasonal variability on invertebrates (Davidson), **2**: 305-333.
- Ohio (Braun), **6**: 89-149.
- fish, in streams of Kashmir and Indian Tibet (Hutchinson), **9**: 145-182.
- forests, Allegheny Plateau (Hough and Forbes), **13**: 299-320.
- Brazil (Davis), **15**: 243-296.
- history of concept (Shantz), **10**: 311-342.
- insects, in cattle droppings (Mohr), **13**: 275-298; in dead logs (Savely), **9**: 321-385.
- invertebrates, relation to plant associates (Dowdy), **14**: 193-222.
- marine coastal communities (Allee), **4**: 541-554.
- prairie (Coupland), **20**: 271-315; (Weaver **20**: 251-270; (Weaver and Albertson), **14**: 393-479; (Weaver and Bruner), **15**: 297-319; **18**: 507-549; (Weaver and Fitzpatrick), **4**: 109-295.
- role of water hyacinth (Penfound and Earle), **18**: 447-472.
- seasonal, of grasshoppers in Texas (Isely), **7**: 317-344.
- sessile marine invertebrates (McDougall), **13**: 321-374.
- vegetation of, Appalachian Mountains (Brown), **11**: 61-97.
- California salt marshes (Purer), **12**: 95.
- Churchill region, Manitoba (McClure), **13**: 1-35.
- granitic flat-rocks (McVaugh), **13**: 119-165.
- Guadalupe (Pendleton), **19**: 91.
- Louisiana marshland (Penfound and Hathaway), **8**: 1-56.
- Michigan bogs (Gates), **12**: 213-254.
- sand-hills, Colorado (Ramaley), **3**: 1-51; Nebraska (Tolstead), **12**: 273-281, 285-288.
- volcanic deposits, Idaho (Eggler), **11**: 277-298.
- Wisconsin lakes (Wilson), **5**: 207-247.
- Sudan grass, see *Holcus*.
- Summer, see Seasonal.
- Sun-flecks in forest communities of Chicago area (Park), **1**: 189-230.
- Sunlight, see Light.
- Superorganism, see Organismic concept.

- Survival of, birds, role of environment (Kendeigh), **4**: 299-417.
 dragonflies eaten by birds (Kennedy), **20**: 103-142.
 tree seedlings in Piedmont forest, relation to light and moisture (Kozlowski), **19**: 207-231.
 white pine in New England (Smith), **10**: 373-420.
 Svihla, Ruth Dowell. The ecological distribution of the mammals on the north slope of the Uinta Mountains, **2**: 47-81, 17 fig.
 Swamps, see also Bogs; Marshes.
 of southern New England (Bromley), **5**: 61-89.
 Okefinokee, vegetation (Wright and Wright), **2**: 109-232.
 Swanson, John H., coauthor, see Wismer, Nettie M.
 Sweetman, Harvey L. Physical ecology of the firebrat, *Thermobia domestica* (Packard), **8**: 285-311, 3 fig.
 Swift, H. H., coauthor, see Hoffmann, C. H.
 Swim bladder, relation to respiration of fish (Powers *et al.*), **2**: 385-473.
Sylvilagus, see Rabbit.
 Symposium, Conditions of existence of aquatic animals (Krogh *et al.*), **4**: 419-498.
 Dynamics of production in aquatic populations (Park *et al.*), **16**: 311-391.
 Insect populations (Chapman *et al.*), **9**: 259-320.
 Marine ecology (Hutchinson *et al.*), **17**: 299-346.
 Oceanography (Vaughan *et al.*), **4**: 499-554.
 Origin and development of natural floristic areas with special reference to North America (Just *et al.*), **17**: 123-234.
 Relation of ecology to human welfare—the human situation (Adams *et al.*), **10**: 307-372.
 Syneecology, plant, concepts and terminology (Cain), **2**: 499-504.
Syphacia peromysci, new species of nematode (Harke-ma), **6**: 219-220.
 Tactile, see Thigmotaxis.
 Tall-grass, see Prairie.
Tamarix gallica on floodplain of Canadian River (Hef-ley), **7**: 345-402.
Tanytarsus in lake bottom fauna (Deevey), **11**: 413-455.
 Tardigrades, see Invertebrates.
Taxidea taxus in desert shrub biome (Fautin), **16**: 251-310.
Taxodium, see Cypress.
 Technique, see Methods.
 Temperature, see also Physical factors; Freezing; Weather.
 as indicator of turbulence in Connecticut lakes (Hutchinson), **11**: 21-60.
 differential effects on *Microbracon hebetor* and host *Ephestia kuehniella* (Payne), **4**: 1-46.
 effect on, ant activity (Weber), **5**: 165-206.
 beet leafhopper (Harries and Douglass), **18**: 45-79.
 cyclomorphosis in *Daphnia* (Brooks), **16**: 409-447.
 distribution of *Ceratium* (Graham), **11**: 99-116.
 firebrat (Sweetman), **8**: 285-311.
 growth of longleaf pine seedlings (Pessin), **8**: 115-149; of pine (Coile), **6**: 533-562.
 heart rate of birds (Odum), **11**: 299-326.
 life cycle of *Lasioderma serricorne* (Powell), **1**: 333-393; correction, **2**: 384.
 limbless lizards (Miller), **14**: 282-284.
 oyster (Mattox), **19**: 343-344.
 [Temperature] [effect on]
 oyster "leech" (Pearse and Wharton), **8**: 605-655.
 phytoplankton (Chandler and Weeks), **15**: 435-457.
 rotifer populations (Edmondson), **16**: 366-367.
 sessile marine invertebrates (McDougall), **13**: 321-374.
 in Douglas Lake (Campbell), **11**: 1-19.
 in mountains of western United States (Baker), **14**: 223-254.
 of air, and water, relation to fish abundance in Lake Erie (Doan), **12**: 296-297, 303-305.
 in prairie and savannah woodland, Oklahoma (Bruner), **1**: 99-188.
 of sand-hill soils (Tolstead), **12**: 264.
 of sandy beaches of Wisconsin lakes (Pennak), **10**: 537-615.
 of water of Georges Bank (Whiteley), **18**: 233-264.
 relation to, distribution of Cladocera and Copepoda (Carl), **10**: 55-110.
 evolution of wingless Carabidae (Darlington), **13**: 37-61.
 hibernation of insects (Hodson), **7**: 271-315.
 life history of *Spirodela polyrhiza* (Jacobs), **17**: 437-469.
 survival of white pine (Smith), **10**: 373-420.
 vegetation on sands of North Carolina coastal plain (Wells and Shunk), **1**: 465-520.
 relations of desert tortoise (Woodbury and Hardy), **18**: 145-200.
 water hyacinth (Penfound and Earle), **18**: 447-472.
 role in life of birds (Kendeigh), **4**: 309-366; (Shaver), **3**: 535-597.
 stratification, see Stratification.
 toleration by insects (Savely), **9**: 321-385.
 zonation in geographical distribution (Hutchins), **17**: 325-335.
 Ten-year ecological study of adjoining grazed and un-grazed woodlands in northeastern Ohio (Dam-bach), **14**: 255-270, 9 fig.
 Tennessee, animals in deciduous forest (Adams), **11**: 189-227.
 Appalachian Valley, reforestation of abandoned fields (Minekler), **16**: 87-108.
 bird census at Reelfoot Lake (Kendeigh), **14**: 67-106.
 distribution of Protozoa (Lackey), **8**: 501-527.
 effect of climatic and weather factors on bird numbers (Shaver), **3**: 535-597.
 forests of Cumberland Mountains (Braun), **12**: 413-447.
 invertebrates of cedar glades (Meyer), **7**: 403-443.
 perpetuation of spruce on cut-over land (Korstian), **7**: 125-167.
 slider turtle (Cagle), **20**: 31-54.
 vegetation of Roan Mountain (Brown), **11**: 61-97.
 Tension zone, see Ecotone.
 Terminology, phytosociological (Cain), **2**: 475-508.
 succession and biotic relationships (Woodbury), **3**: 164-169.
 Termite nests—a study of the phylogeny of behavior (Emerson), **8**: 247-284, 14 fig.
 Terraces of eastern Cuba, vegetation (Seifriz), **13**: 375-426.
Terrapene c. carolina, populations and home range (Stickel), **20**: 351-378.

- Territoriality, see also Life histories; Populations.
in bird population of elm-maple forest (Twomey),
15: 173-205.
- Tertiary centers and migration routes, symposium paper
(Chaney), 17: 139-148.
- Tettigoniidae of Texas (Isely), 11: 457-475.
- Texas, Carrizo sands, vegetation and habitat factors
(McBryde), 3: 247-297.
factors affecting mesquite eradication (Fisher *et al.*),
16: 109-126.
- Fort Worth Prairie, vegetation (Dyksterhuis), 16:
1-29.
- grasshoppers (Isely), 7: 317-344; 8: 551-604; 11:
457-475.
- injury of trees by drought in prairie region of pan-
handle (Albertson and Weaver), 15: 393-434.
- reservoir lakes, limnology (Harris and Silvey), 10:
111-143.
- slider turtle (Cagle), 20: 31-54.
- Western Cross Timbers, vegetation (Dyksterhuis), 18:
325-376.
- Thermal, see Temperature.
- Thermobia domestica*, physical ecology (Sweetman), 8:
285-311.
- Thermocline, see Temperature.
- Thigmotaxis, in catfish, relation to aggregating behavior
(Bowen), 1: 1-35.
- Thigmotropism, relation to activity of crayfish (Roberts),
14: 359-392.
- Thomomys bottae*, populations of Sierra Nevada (Storer
et al.), 14: 165-192.
- Thomson, John W., Jr. Relic prairie areas in central
Wisconsin, 10: 685-717, 25 fig.
- Thorntwaite, C. W. The relation of geography to human
ecology, symposium paper, 10: 343-348.
- Thuja occidentalis*, association in Michigan bogs (Gates),
12: 242-243.
in Minnesota bogs (Conway), 19: 193-195.
plicata-*Tsuga heterophylla* association, biotic com-
munities (Dirks-Edmunds), 17: 235-260.
- Tibet, Indian, fishes (Hutchinson), 9: 145-182.
- Tidal communities of Pacific coast (Shelford *et al.*),
5: 249-354.
inlet, marine communities (Dexter), 17: 261-294.
marshes, vegetation of in Connecticut (Miller and
Egler), 20: 143-172.
- Tide, relation to, animals of sand beaches (Pearse *et al.*),
12: 135-190.
breeding periodicity of marine animals (Kor-
ringa), 17: 347-381.
role in setting and distribution of oyster (Prytherch),
4: 47-107.
- Tilia americana* in deciduous forest (Daubenmire), 6:
233-268.
in Wisconsin (Marks), 12: 113-133.
- Till plain, Illinoian, forests (Braun), 6: 89-149.
- Tillering of prairie grasses (Blake), 5: 405-460.
of Sudan grass (de Peralta), 5: 355-404.
- Timberline, see Ecotone.
- Timbergen, N. Die ernährungsökologischen Beziehungen
zwischen *Asio otus otus* L. und ihren Beute-
tieren, insbesondere den *Microtus*-arten, 3: 443-
492, 9 fig.
- Tippecanoe River, see Indiana.
- Toads, see Amphibia.
- Tobacco beetle, see *Lasioderma*.
- Tobago, vegetation (Beard), 14: 135-163.
- Toleration of temperature, and humidity by bees (Pear-
son), 3: 373-441.
by insects (Savely), 9: 321-385.
- Tolstead, William L. Vegetation of the northern part
of Cherry County, Nebraska, 12: 255-292, 35
fig.
- Topography, relation, to drought injury in prairie (Rob-
ertson), 9: 431-491.
to grassland types in western North Dakota
(Hanson and Whitman), 8: 57-114.
- Tortoise, desert, see *Gopherus*.
- Townes, H. K., coauthor, see Hoffmann, C. H.
- Toxicity of copper in lakes (Riley), 5: 53-94.
of DDT for forest invertebrates (Hoffmann *et al.*),
19: 1-46.
- Transect of Black Mountain, Kentucky (Braun), 10:
193-241.
- Transition, see Ecotone.
- Transparency, see also Physical factors.
of lake water (Oosting), 3: 493-533.
- Transpiration, of Piedmont forest species (Kozlowski),
19: 207-231.
relation to soil moisture (Pearson), 12: 331-335.
- Tree(s), see also Forest.
asymmetry in Columbia River gorge (Lawrence), 9:
217-257.
effect of precipitation on annual rings (Schumacher
and Day), 9: 387-429.
hole breeding mosquitoes (Jenkins and Carpenter),
16: 31-47.
injury in prairie climate by drought (Albertson and
Weaver), 15: 393-434.
plantations, effect of *Robinia pseudoacacia* on growth
of associated species (Chapman), 5: 37-60.
- Tribolium castaneum* and *T. confusum*, interspecies com-
petition (Park), 18: 265-307.
confusum, populations, effect of humidity (Holda-
way), 2: 261-304.
- Trissocladius*, in lake bottom fauna (Deevey), 11: 413-
455.
- Trogodytes, see Wren.
- Tropisms in animals (Roberts), 12: 355-358, 406-407.
- Tryon, E. H. Effect of charcoal on certain physical,
chemical, and biological properties of forest
soils, 10: 81-115, 5 fig.
- Tsuga canadensis*, effect of precipitation on annual rings
(Schumacher and Day), 9: 387-429.
in forests of Allegheny Plateau (Hough and
Forbes), 13: 299-320.
in primeval forest of Wisconsin and Michigan
(Potzger), 16: 211-250.
on Black Mountain, Kentucky (Braun), 10:
193-241.
heterophylla, see also *Thuja plicata*.
and *T. mertensiana* in Alaska (Cooper), 12: 1-22.
- Tundra, alpine, in Pike's Peak region (Whitfield), 3:
75-105.
biotic communities, Manitoba (McClure), 13: 1-35.
forest ecotone, see Ecotone.
in Alaska (Cooper), 12: 1-22.
- Turbidity, effect on, dragonflies (Wright), 13: 481-497.
phytoplankton (Chandler and Weeks), 15: 435-
457.
relation to, fish abundance in Lake Erie (Doan), 12:
297-299, 305-306.
plankton populations of upper Mississippi River
(Reinhard), 1: 395-464.
productivity of Texas reservoir lakes (Harris and
Silvey), 10: 111-143.

- Turbulence in Connecticut lakes (Hutchinson), **11**: 21-60.
of water over Georges Bank (Whiteley), **18**: 233-264.
Turion phase of *Spirodela polyrhiza* (Jacobs), **17**: 437-469.
- Turkey oak, see *Quercus catesbaei*.
- Turnage, William V. and Arthur L. Hinckley. Freezing weather in relation to plant distribution in the Sonoran Desert, **8**: 529-550, 4 fig.
- Turtles, see *Gopherus*; *Pseudemys*; *Terrapene*.
- Twomey, Arthur C. The bird population of an elm-maple forest with special reference to aspection, territorialism, and coactions, **15**: 173-205, 12 fig.
- Typha*, see Bogs; Marshes; Swamps.
- Typical sand beach animal, the mole crab, *Emerita talpoida* (Say), (Wharton), **12**: 157-164, 8 fig.
- Uinta Mountains, climate (Baker), **14**: 244.
distribution of mammals on north slope (Svihla), **2**: 47-81.
- Ulmus*, see also Elm.
americana, in deciduous forest (Braun), **6**, 89-149.
in prairie climate (Albertson and Weaver), **15**: 393-434.
pumila, effect of *Robinia pseudoacacia* on growth (Chapman), **5**: 37-60.
- Uma* spp. (Stebbins), **14**: 311-332.
- Underground plant parts, effect of drought (Weaver and Albertson), **13**: 63-117.
- Utah, see also Sonoran Desert.
biotic relationships and succession in Zion Canyon (Woodbury), **3**: 147-245.
communities of northern desert shrub biome (Fautin), **16**: 251-310.
desert tortoise (Woodbury and Hardy), **10**: 145-200.
distribution of mammals on north slope of Uinta Mountains (Svihla), **2**: 47-81.
effect of soil on distribution of mammals (Hardy), **15**: 71-108.
mountain climates (Baker), **14**: 223-254.
Wasatch chaparral, biotic communities (Hayward), **10**: 473-506.
- Plateau, effect of microenvironment on establishment of vegetation on overgrazed range (Ellison), **10**: 95-121.
- Utilization of, fish populations by man (Ricker), **16**: 373-391.
marshlands (Penfound and Hathaway), **8**: 1-56.
Pacific coast forest vegetation by deer (Cowan), **15**: 109-139.
vegetation by man (Shantz), **10**: 311-342.
- Utricularia*, relation to Rotatoria (Edmondson), **15**: 141-172.
- Vancouver Island, see British Columbia.
- Variations in the heart rate of birds: a study in physiological ecology (Odum), **11**: 299-326, 22 fig.
- Vaughan, T. Wayland. Present trends in the investigation of the relations of marine organisms to their environment, symposium paper, **4**: 501-522.
- Vegetation (of), see also Forest; Communities; Revegetation.
and habitat factors, of the Carrizo sands (McBryde), **3**: 247-297, 24 fig.
of the coarser sands of the North Carolina coastal plain; an ecological study (Wells and Shunk), **1**: 465-520, 32 fig.
aquatic, see Aquatic.
- [Vegetation of]
Berkshire Plateau, Massachusetts (Egler), **10**: 145-192.
Black Forest region, Colorado (Livingston), **10**: 123-144.
Black Mountain, Kentucky (Braun), **10**: 193-241.
bogs, Michigan (Gates), **12**: 213-254; Minnesota (Conway), **10**: 173-206.
boreal America (Raup), **17**: 221-234.
coastal sand dunes, California (Purer), **6**: 1-87.
Columbia River gorge (Lawrence), **9**: 217-257.
Cuba (Carabia), **15**: 321-341; (Seifriz), **13**: 375-426.
depositing creek bank, effect on bird population (Shaver), **3**: 535-597.
grazed and ungrazed woodland (Dambach), **14**: 255-270.
Guadalupe (Pendleton), **10**: 75-93.
Gulf coast marshes (Wright), **13**: 481-497.
Hudson Bay, east coast (Marr), **10**: 117-144.
James Peak, Colorado (Cox), **3**: 299-372.
Louisiana marshlands (Penfound and Hathaway), **8**: 1-56.
Oahu, Hawaii (Egler), **17**: 383-435.
Okefinokee Swamp (Wright and Wright), **2**: 109-232.
Oklahoma (Bruner), **1**: 99-188, 31 fig.
on the peat lands of Dane County, Wisconsin (Frolik), **11**: 117-140, 26 fig.
origin and development in relation to fossil record, symposium (Just et al.), **17**: 123-234.
pastures and meadow, utilization by invertebrates (Wolcott), **7**: 1-90.
phenology (Leopold and Jones), **17**: 81-122.
postglacial, in Minnesota (Artist), **9**: 493-525.
prairie, see Prairie.
relation to ant activity (Weber), **5**: 165-206.
distribution, of limbless lizards (Miller), **14**: 286-287; of mammals in Utah (Hardy), **15**: 71-108.
human ecology (Thorntwaite), **10**: 343-348.
man (Shantz), **10**: 311-342.
nesting of ducks (Low), **15**: 35-69.
Roan Mountain: a phytosociological and successional study (Brown), **11**: 61-97, 35 fig.
Rocky Mountain National Park (Holch et al.), **11**: 327-345.
salt marshes (Purer), **12**: 81-111.
Sierra de Nipe, Cuba (Carabia), **15**: 321-341, 26 fig.
southeastern Washington and adjacent Idaho (Daubenmire), **12**: 53-79.
southwestern Utah (Woodbury and Hardy), **10**: 170-171.
Texas reservoir lakes (Harris and Silvey), **10**: 127-130.
the Bimini island group, Bahamas, British West Indies (Howard), **20**: 317-349, 28 fig.
the Fort Worth Prairie (Dyksterhuis), **16**: 1-29, 11 fig.
the granitic flat-rocks of the southeastern United States (McVaugh), **13**: 119-165, 36 fig.
the northern part of Cherry County, Nebraska (Tolstead), **12**: 255-292, 35 fig.
the Pike's Peak region (Whitfield), **3**: 75-105, 25 fig.
the Prince William Sound region, Alaska; with a brief excursion into post-Pleistocene climatic history (Cooper), **12**: 1-22, 14 fig.
the Wequetequoek-Pawcatuek tidal-marshes, Connecticut (Miller and Egler), **20**: 143-172, 19 fig.
the Western Cross Timbers (Dyksterhuis), **10**: 325-376, 35 fig.

[Vegetation (of)]

- Tobago, British West Indies (Beard), **14**: 135-163.
 Vancouver Island, food of deer (Cowan), **15**: 109-139.
 western North America (Mason), **17**: 201-210.
 Vermont, distribution of sessile Rotatoria (Edmondson), **14**: 31-66.
 Vertebrates, see Animals; Fish; Amphibia; Reptiles; Birds; Mammals.
 Vertical distribution of, Ceratium in ocean (Graham), **11**: 99-116.
 copepods (Clarke), **4**: 530-540.
 lake bottom fauna (Deevey), **11**: 413-455; (Eggleston), **1**: 231-331; (Moore), **9**: 572-574.
 microfauna of Duke Forest (Pearse), **16**: 127-150.
 phosphorus in Connecticut lakes (Hutchinson), **11**: 21-60.
 plankton, of Georges Bank (Whiteley), **10**: 233-264; of reservoir lakes, Colorado (Pennak), **19**: 253; Texas (Harris and Silvey), **10**: 137-139.
 salamanders (Hairston), **19**: 53-59.
 sessile marine invertebrates (McDougall), **13**: 321-374.
 the plankton Rotifera in Douglas Lake, Michigan, with special reference to submerged depression individuality (Campbell), **11**: 1-19, 8 fig.
 Viability and germination of seeds and early life history of prairie plants (Blake), **5**: 405-460, 14 fig.
 Vibrations, in water, relation to aggregation in catfish (Bowen), **1**: 1-35.
 Vilas County, see Wisconsin.
 Virginia, forests of Cumberland Mountains (Braun), **12**: 413-447.
 perpetuation of spruce on cut-over land (Korstian), **7**: 125-167.
 shortleaf pine annual rings (Schumacher and Day), **9**: 387-429.
 vegetation on granitic flat-rocks (McVaugh), **13**: 119-165.
 Vision, role in aggregation behavior in catfish (Bowen), **1**: 1-35.
 Vitality (Cain), **2**: 490.
 Viviparus, see Snails.
 Volcanic deposits, primary succession on (Eggler), **11**: 277-298.
 Vole, see *Microtus*.
Vulpes regalis, food coactions (Scott), **13**: 427-479.
 Waksman, Selman A. The distribution and conditions of existence of bacteria in the sea, symposium paper, **4**: 523-529.
 Ward, Henry S., Jr. Reactions of adapted legumes and grasses on the structural condition of eroded Lindley-Weller soils in southeastern Iowa, **19**: 145-171, 18 fig.
 Wasatch, see Utah.
 Washington (State), limnology of Lake Washington (Scheffer and Robinson), **9**: 95-143.
 mountain climates (Baker), **14**: 223-254.
 Palouse prairie, vegetation (Daubenmire), **12**: 53-79.
 region, Hungarian partridge (Yocom), **13**: 167-201.
 Pudget Sound, San Juan Islands and Friday Harbor, marine biotic communities (Shelford et al.), **5**: 249-354.
 vegetation of Columbia River gorge, especially asymmetry of trees (Lawrence), **9**: 217-257.
 Wasps, see *Microbracon*.
 Water, see Lakes; Ocean; Rivers; Precipitation; Moisture; Chemical factors; Physical factors.
 brackish, see Brackish.
 content of prairie soil after drought (Weaver and Albertson), **13**: 63-117.
 hyacinth, see *Piaropus*.
 in beach sand (Pennak), **10**: 537-615.
 relation to, growth in Piedmont forest (Kozlowski), **19**: 207-231.
 human ecology (Thorntwaite), **10**: 343-348.
 relations of, desert tortoise (Woodbury and Hardy), **18**: 145-200.
 sandy soils of North Carolina coastal plain (Wells and Shunk), **1**: 465-520.
 seedling conifers (Marshall), **1**: 37-98.
 Sudan grass (de Peralta), **5**: 355-404.
 vegetation on depleted range (Ellison), **19**: 95-121.
 role in insect hibernation (Hodson), **7**: 271-315.
 -soluble chemicals, use in mesquite eradication (Fisher et al.), **16**: 109-126.
 table, in sand-hill soils (Tolstead), **12**: 262-263.
 relation to forest seedling survival (Stoeckeler and Limstrom), **12**: 196-209.
 Waves, see also Physical factors.
 in lakes, effect on stream drift animals (Dendy), **14**: 333-357.
 Weather, see also Climate; Drought; Freezing; Humidity; Ice; Precipitation; Temperature; Wind.
 effect on, beet leafhopper (Harries and Douglass), **18**: 45-79.
 birds (Kendeigh), **4**: 309-390; (Shaver), **3**: 535-597.
 crayfish (Roberts), **14**: 359-392.
 fox squirrel (Hicks), **19**: 287-302.
 turtles (Stickel), **20**: 351-378.
 relation to, abundance of fish (Doan), **12**: 293-314.
 insect hibernation (Hodson), **7**: 271-315.
 migration of nuthatches (Ball), **17**: 501-533.
 temperary forest types in Idaho (Larsen), **10**: 1-54.
 Weaver, J. E. Stabilization of midwestern grassland, **20**: 251-270, 16 fig.
 and F. W. Albertson. Nature and degree of recovery of grassland from the great drought of 1933-1940, **14**: 393-479, 136 fig.
 Resurvey of grasses, forbs, and underground plant parts at the end of the great drought, **13**: 63-117, 70 fig.
 and W. E. Bruner. A seven-year quantitative study of succession in grassland, **15**: 297-319, 17 fig.
 Prairies and pastures of the dissected loess plains of central Nebraska, **18**: 507-549, 60 fig.
 and R. W. Darland. Soil-root relationships of certain native grasses in various soil types, **19**: 303-338, 31 fig.
 and T. J. Fitzpatrick. The prairie, **4**: 109-295, 121 fig.
 coauthor, see Albertson, F. W.
 Weber, Neal A. The biology of the thatching ant, *Formica rufa obscuripes* Forel, in North Dakota, **5**: 165-206, 6 fig.
 Weeds, see also *Bromus*; *Piaropus*.
 competition with Sudan grass (de Peralta), **5**: 355-404.
 control, effect on seed production of native grasses (Cornelius), **20**: 1-29.
 in Great Plains grasslands (Costello), **14**: 107-134.

- [Weeds]
in pastures after drought (Albertson and Weaver),
14: 1-29.
in succession on abandoned fields (Keever), **20**: 229-250.
interception of rainfall (Clark), **10**: 243-277.
Weeks, Owen B., coauthor, see Chandler, David C.
Weese, A. O., coauthor, see Shelford, V. E.
Weight-height, see Height-weight.
Wells, B. W. and I. V. Shunk. The vegetation and habitat factors of the coarser sands of the North Carolina coastal plain: an ecological study, **1**: 465-520, 32 fig.
West Virginia, perpetuation of spruce on cut-over land (Korstian), **7**: 125-167.
Western Cross Timbers, see Texas; Oklahoma.
Wharton, George W. A typical sand beach animal, the mole crab, *Emerita talpoida* (Say), **12**: 157-164, 8 fig.
Observations on *Ascoschöngastia indica* (Hirst 1915) (Acarinida: Trombiculidae), **16**: 151-184.
coauthor, see Pearse, A. S.
Wheatgrass, see *Agropyron*.
White Mountains, see New Hampshire.
Whiteley, George C., Jr. The distribution of larger planktonic Crustacea on Georges Bank, **18**: 233-264, 10 fig.
Whitfield, C. J. The vegetation of the Pike's Peak region, **3**: 75-105, 25 fig.
Whitman, Warren, coauthor, see Hanson, H. C.
Whitwell, H. H., coauthor, see Holch, A. E.
Williams, Arthur B. The composition and dynamics of a beech-maple climax community, **6**: 317-408, 16 fig.
Williams, Robert H., coauthor, see Gunter, Gordon.
Wilson, L. R. Lake development and plant succession in Vilas County, Wisconsin. Part I. The medium hard water lakes, **5**: 207-247, 7 fig.
Wilting of conifer seedlings, relation to soil moisture and evaporation (Marshall), **1**: 37-98.
Wind, see also Weather.
effect on ant activity (Weber), **5**: 165-206.
relation to, asymmetry of trees (Lawrence), **9**: 217-257.
sand dunes (Tolstead), **12**: 265-266.
Windfall, in bog forests (Gates), **12**: 241.
Wings, atrophy in Carabidae (Darlington), **13**: 37-61.
Winter, see also Hibernation; Seasonal.
buds (turions), of *Spirodela polyrhiza* (Jacobs), **17**: 437-469.
-killing of fish in ice-covered lakes (Greenbank), **15**: 343-392.
of trees (Lawrence), **9**: 217-257.
range of eastern house wren (Kendeigh), **4**: 299-417.
Wire grass, see *Aristida*.
Wisconsin, aspen community (Kittredge), **8**: 151-246.
Atlantic coastal plain plants in sand barrens of (McLaughlin), **2**: 335-383.
bobwhite populations (Errington), **15**: 1-34.
Coon Valley, land use and plant succession (Marks), **12**: 113-133.
Dane County, phenological record (Leopold and Jones), **17**: 81-122.
vegetation on peat lands (Frolik), **11**: 117-140.
distribution of sessile Rotatoria (Edmondson), **14**: 31-66.
lakes, ecology of fish (Pearse), **4**: 475-480.
Metazoa inhabiting sand beaches (Pennak), **10**: 537-615.
[Wisconsin] [lakes]
organic matter (Birge and Juday), **4**: 440-474.
sponges (Jewell), **5**: 461-504.
northern, factors influencing reforestation (Stoeckler and Limstrom), **12**: 191-212.
primeval forest and post-glacial history (Potzger), **16**: 211-250.
plankton of upper Mississippi River (Reinhard), **1**: 395-464.
relic prairie areas (Thomson), **10**: 685-717.
Sauk County, phenological record (Leopold and Jones), **17**: 81-122.
Vilas County, lake development and plant succession (Wilson), **5**: 207-247.
Wisner, Nettie M. and John H. Swanson. Some marine biotic communities of the Pacific coast of North America. Part II. A study of the animal communities of a restricted area of soft bottom in San Juan channel, **5**: 333-354, 5 fig.
Wolecott, George N. An animal census of two pastures and a meadow in northern New York, **7**: 1-90.
Wood Buffalo Park (Soper), **11**: 347-412.
Woodbury, Angus M. Biotic relationships of Zion Canyon, Utah, with special reference to succession, **3**: 147-245, 29 fig.
and Ross Hardy. Studies of the desert tortoise *Gopherus agassizii*, **18**: 145-200, 25 fig.
Woodland, cryptozoa of Illinois (Cole), **16**: 49-86.
grazed and ungrazed, in northeastern Ohio (Dambach), **14**: 255-270.
in prairie region, drought injury of trees (Albertson and Weaver), **15**: 393-434.
in sand-hills region of Nebraska (Tolstead), **12**: 288-290.
Worms, see Invertebrates.
Wren, eastern house, heart rate (Odum), **11**: 299-326;
life history (Kendeigh), **4**: 299-417; (Kendeigh and Baldwin), **7**: 91-123.
Wright, A. H. and A. A. Wright. The habitats and composition of the vegetation of Okefinokee Swamp, Georgia, **2**: 109-232, 75 fig.
Wright, Herman P. Aquatic Mollusca of the Tippecanoe River system. Part I. Post-glacial migration and present distribution of four species of snails, **2**: 233-259, 14 fig.
Wright, Mike. A comparison of the dragonfly fauna of the lower delta of the Mississippi River with that of the marshes of the central Gulf coast, **13**: 481-497, 1 fig.
Wyoming, arthropods of spruce-fir forest (Fichter), **9**: 183-215.
bluebunch wheatgrass, and height-weight relationships of range grasses (Heady), **20**: 55-81.
distribution of mammals on north slope of Uinta Mountains (Svihla), **2**: 47-81.
important species of major forage types (Costello), **14**: 107-134.
Medicine Bow Mountains, biotic communities (Blake), **15**: 107-242.
mountain climates (Baker), **14**: 223-254.
seasonal migration of mule deer (Russell), **2**: 1-46.
Xerothermic period, evidence (Cooper), **12**: 18-20.
Yellow fever, relation to ecology of Brazilian forests (Davis), **15**: 243-296.
Yellowstone National Park, seasonal migration of mule deer (Russell), **2**: 1-46.

Yield, see Production; Productivity; Utilization.

Yocom, Charles F. The Hungarian partridge (*Perdix perdix* Linn.) in the Palouse region, Washington, **13**: 167-201, 17 fig.

Yosemite National Park, seasonal migration of mule deer (Russell), **2**: 1-46.

Young, Robert T. The life of Flathead Lake, Montana, **5**: 91-163, 12 fig.

Zelia vertebrata, parasitic in *Passalus cornutus* (Pearse et al.), **6**: 483-484.

Zion Canyon, biotic relationships and succession (Woodbury), **3**: 147-245.

Zonation, see also Distribution; Temperature zonation; Vertical distribution.

in distribution of *Ceratium* in ocean (Graham), **11**: 99-116.

of animals in sand beaches (Pearse et al.), **12**: 147, 174.

of fish of Kashmir and Indian Tibet (Hutchinson), **9**: 145-182.

of intertidal communities (Dexter), **17**: 261-294.

of vegetation, of Berkshire Plateau, Massachusetts (Egler), **10**: 145-192.

of bog margins (Conway), **10**: 173-206.

Zonotrichia, see Sparrow.

Zooplankton, see Plankton.

zonation;

am), 11:

12: 147,

chinson),

-294.

achusetts